St. Petersburg University
Graduate School of Management

Master in Corporate Finance

THE RELATIONSHIP BETWEEN CEO TRAITS AND A COMPANY'S PERFORMANCE

Master’s Thesis by the 2nd year student—Makhalina Elizaveta

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ЗАЯВЛЕНИЕ О САМОСТОЯТЕЛЬНОМ ХАРАКТЕРЕ ВЫПОЛНЕНИЯ ВЫПУСКНОЙ КВАЛИФИКАЦИОННОЙ РАБОТЫ

Я, Махалина Елизавета Юрьевна , студентка второго курса магистратуры направления «Менеджмент», заявляю, что в моей магистерской диссертации на тему «Взаимосвязь характеристик генерального директора и результативности деятельности компании», представленной в службу обеспечения программ магистратуры для последующей передачи в государственную аттестационную комиссию для публичной защиты, не содержится элементов плагиата.

Все прямые заимствования из печатных и электронных источников, а также из защищенных ранее выпускных квалификационных работ, кандидатских и докторских диссертаций имеют соответствующие ссылки.

Мне известно содержание п. 9.7.1 Правил обучения по основным образовательным программам высшего и среднего профессионального образования в СПбГУ о том, что «ВКР выполняется индивидуально каждым студентом под руководством назначенного ему научного руководителя», и п. 51 Устава федерального государственного бюджетного образовательного учреждения высшего образования «Санкт-Петербургский государственный университет» о том, что «студент подлежит отчислению из Санкт-Петербургского университета за представление курсовой или выпускной квалификационной работы, выполненной другим лицом (лицами)».

_____ (Подпись студента)

04.06.2020 _____ (Дата)

STATEMENT ABOUT THE INDEPENDENT CHARACTER OF THE MASTER THESIS

I, Makhalina Elizaveta , (second) year master student, program «Management», state that my master thesis on the topic « The relationship between CEO traits and a company's performance », which is presented to the Master Office to be submitted to the Official Defense Committee for the public defense, does not contain any elements of plagiarism.

All direct borrowings from printed and electronic sources, as well as from master theses, PhD and doctorate theses which were defended earlier, have appropriate references.

I am aware that according to paragraph 9.7.1. of Guidelines for instruction in major curriculum programs of higher and secondary professional education at St.Petersburg University «A master thesis must be completed by each of the degree candidates individually under the supervision of his or her advisor», and according to paragraph 51 of Charter of the Federal State Institution of Higher Education Saint-Petersburg State University «a student can be expelled from St.Petersburg University for submitting of the course or graduation qualification work developed by other person (persons)».

_____(Student’s signature)

04.06.2020 _____ (Date)

АННОТАЦИЯ

Автор	Махалина Елизавета Юрьевна
Название ВКР	Взаимосвязь характеристик генерального директора и результативности деятельности компании
Образовательная программа	Корпоративные финансы
Направление подготовки	Менеджмент
Год	2020
Научный руководитель	Никулин Егор Дмитриевич
Описание цели, задач и основных результатов	Актуальность исследования заключается в важности роли генерального директора и в том, насколько его образ и действия связаны с результативностью деятельности компании. Цель нашей работы заключалась в том, чтобы расширить набор использованных в других статьях характеристик генеральных директоров, добавив новые параметры и на их основе проанализировать взаимосвязь между характеристиками генеральных директоров и результативностью Российских компаний. Научная новизна работы заключается в изучении дополнительных характеристик генеральных директоров, не использованных в аналогичных работах ранее. Все изученные работы по аналогичной теме в большей степени проведены на данных по развитым странам, что подтверждает наш выбор Российского рынка как менее изученного. Данные для этого исследования были собраны вручную и позволили нам не только проанализировать выдвинутые гипотезы, но также и являются ценным источником для будущих исследований в этой сфере. В результате работы на основе проанализированной литературы удалось установить, какие характеристики генерального директора важны для

	результативности деятельности компании. В результате проведённого в практической части анализа удалось выявить взаимосвязи между предложенными характеристиками и результативностью Российских компаний. Например, существует отрицательная взаимосвязь между дополнительными ступенями образования генерального директора и результативностью деятельности компании. Наши результаты могут быть полезны для работодателей, других стейкхолдеров, а также для самих генеральных директоров.
Ключевые слова	Генеральный директор, характеристики генерального директора, результативность компании, Российские компании

ABSTRACT

Master Student's Name	Makhalina Elizaveta
Master Thesis Title	The Relationship between CEO Traits and a Company's Performance
Educational Program	Master in Corporate Finance - MCF
Main field of study	Management
Year	2020
Academic Advisor’s Name	Egor D. Nikulin
Description of the goal, tasks and main results	The relevance of our research is explained by the importance of the role of the CEO and how his or her image and actions are related to the company's performance. The goal of our work was to expand the set of characteristics of CEOs used in other articles by adding new parameters and using them to analyze the relationship between the characteristics of CEOs and the performance of Russian companies. The scientific novelty of our work consists in the analysis of additional characteristics of CEOs that have not been used in similar works before. All the studies on a similar topic were mostly based on data on developed countries, which confirms our choice of the Russian market as a less researched one. The data for our study was collected manually and allowed us not only to analyze the hypotheses put forward, but also serve as a valuable source for future research in this field. As a result, based on the analyzed literature, we were able to determine which characteristics of the CEO are important for the company's performance. Based on results of the empirical analysis, we identified the relationship between the proposed characteristics and the performance of Russian companies. For example, there is a negative interrelationship between the additional educational levels of a CEO and the company's performance.

	Our results can be useful for employers, other stakeholders, and CEOs themselves.
Keywords	CEO, CEO characteristics, company performance, Russian companies

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INTRODUCTION

In today's world companies play a crucial role in functioning of economic system. They meet the various needs of society and that's why they are an indispensable element of the economy. And who better guides the whole operations of a company than its Chief Executive Officer (CEO). CEOs have almost limitless responsibilities, but to sum up they oversee all of the aspects of companies' business and manage the strategy and development of a firm in the future. CEOs also are the figures that report to the shareholders and manage the financial state of a company. Thus CEO is one of, if not the most, important positions in the company, as it can actually influence the future of it, and is crucial to the company they manage and have all the power to make changes in it (Adams, Almeida, and Ferreira 2005).

Boards of Directors and other stakeholders in many companies see appointed CEO as a source of change and improvement for the company, but not every CEO can guarantee the company's development and prosperity. Therefore, the process of selecting a CEO requires special attention and accuracy, due to the fact that the company is very susceptible to the actions of top management and in some way becomes a "reflection" of its leader (Hambrick and Mason 1984).

We can clearly see that there really exists a problem of which set of CEO traits should be perceived as valuable ones in order to make the Russian company prosperous. Many authors in their works analyze the role of the CEO in the company in many different aspects (Saidu 2019; Zhang 2010; Diks 2016). Almost all of investigated researches were conducted on foreign markets - meaning that there is not a lot of works concerning similar to our topic on the Russian companies and this makes us think that this is a place where exists the research gap that can be filled with our paper. It is evident from the literature review on the similar topics that there are already ideas about importance of such CEOs characteristics as gender, age, level of compensation, even relationships with colleagues. But still, many aspects remain unexplored or insufficiently explored. So, we believe that there is still an unsolved gap about what exactly companies should look at choosing their CEO, in other words which other characteristic (not only the most used ones) of CEO of companies will have interrelationship with company performance. And our work will incorporate the use of such novel and different metrics to cover this existing gap.

Thus, we can see what our work will be aimed at - broaden the existing set of characteristics by adding unique ones and take a few more steps forward in the study of the characteristics of CEOs and their relationship with the Russian company performance. And as for practical importance, this analysis may help to cover a little bit more of this problem and may help employers to find a better approach to choosing a CEO following the pattern of other companies and will help other stakeholders in analyzing the firm and corresponding process of decision-

making. Here we should also state that in this paper we will use notion “traits” and “characteristics” as synonymous terms.

In order to conduct a satisfactory research, we should understand the statement of research objectives which will guide the activities of research:

1. Review the literature on existing CEO traits and their relationship with company performance
2. Come up with a set of CEO characteristics which will be used in this work and formulate the corresponding hypotheses
3. Analyze approaches to the concept of financial performance of the company and select the most appropriate metrics that fit the aforementioned goal of the study
4. Collect all data on CEO traits and companies’ financials
5. Conduct an empirical study aimed at analyzing the relationship between CEO characteristics and company performance
6. Analyze the results of an empirical study, draw appropriate conclusions based on these results and give practical recommendations

In order to collect data on CEO characteristics and financials of the companies the following sources of information were used during the research:

1. Interfax website
2. SPARK database
3. Thomson Reuters Eikon database
4. Public informational sources
5. Official websites of companies

Structure of this work will be as follows:

Firs of all, we will investigate researchers which worked on the same topic in order to accumulate already existing knowledge in this area. We will study articles on CEO`s characteristics and on analysis of the relationship between these characteristics and company`s performance. From the analysis of works on a similar topic we will be able not only to select the most frequently used characteristics of CEOs for our work (on which we will test similar hypotheses but now for the Russian market), but also to identify which traits were not considered in other works at all. The latter will help us to offer our own additional characteristics of CEOs for which, based on underlying psychological, sociological and economic reasons, we will formulate our own hypotheses and test them for the Russian market.

Also, we will analyze approaches to determining the organization's performance and ways to evaluate it. This part of the work will help us to get all possible theoretical information in order to make appropriate comparisons and apply our conclusions.

The next step is collecting the data. We will make the list of the companies for our research and find all important indicators and information which is needed. To conduct this, we will use various databases and the official websites of the companies. We will use Interfax website in order to get general information about the company and it`s CEO. We will look at section 5 of quarterly reports of each company. This section will allow us to find information on the CEO and the Board of Directors. For financial indicators we will use SPARK and Thomson Reuters Eikon databases and financial reports of companies if needed. So, at this part of the work we will construct a large and unique hand collected dataset which will be the basis for the study.

Further, after we will have all the data, we will make preliminary comparisons, analyze the basic statistics and some indicators and factors in dynamic. On this step we will also calculate several additional coefficients to expand our dataset if needed. It will help us to take a quick look at our data and understand main similarities and differences between firms and understand the whole picture.

The last step of our statistical analysis is regression modeling. Here we should use the panel data regression in order to take into account not only the difference from company to company but also difference in time. We will construct several models – starting from simple multiple regression with dummy variables and cross effects and moving on to more complex ones if it would be needed. This will help us to understand the interrelation between individual characteristics of CEOs and the company performance and to confirm or not confirm corresponding hypotheses. The statistical package Stata will be used for the econometric research.

Following up all the listed steps we will make our research full and deep. Finally, we will get the clear understanding about which traits of the CEO are mostly interconnected with the company performance in Russia and will be able to make recommendations about how to choose the best CEO for the company and how to better analyze the firms, paying attention to its managerial structure. Results of this this work will hopefully shorten the existing gap for the Russian market.

CHAPTER 1. THEORETICAL BACKGROUND FOR EVALUATING THE COMPANY'S PERFORMANCE AND CHARACTERISTICS OF THE CEO

In this Chapter based on existing researches we will discuss the concept of a CEO, namely we will talk about definition of the notion, discuss CEO`s role and responsibilities in the company and the functions that he or she performs. Moreover, we will cover the concept of companies` performance – its definition, importance and approaches to its evaluation.

1.1. Definition of the notion of the CEO, role of the CEO in the company and his or her main responsibilities

There are a number of studies aimed at investigating various aspects that affect the activities and performance of the organization, in particular - what role in this process is assigned to the main managers of the company. Researchers who worked on the Upper Echelon Theory claimed that both the company's strategic results and performance are the reflection of the company's top stakeholders - the company's managers (Hambrick and Mason 1984). Also, there is an opinion that all personal values of managers, their personal qualities and accumulated experience together influence a wide range of corporate policies (Roussanov and Savor 2014; Dahl, Dezső, and Ross 2012). CEOs have a significant impact on the company's profitability and investments, so they are of great importance to the company they lead (Bennedsen, González, and Wolfenzon 2020). Senior executives are the ones in the company that know how the things "ought to be" done (Nonaka 1991).

In existing literature there are number of researches aimed at investigating different aspects of concept of Chief Executive Officer (CEO). We believe that from the very beginning we should understand the notion of the Chief Executive Officer.

Stressing out the differences among the top level management authors of the article “Making of a CEO: Study of the successful CEO’S globally who and what are CEO’S” (Jain and Yadav 2017) provided a very fruitful definition which will help us to understand the concept of Chief Executive Officer. According to this article, CEO is a highest-ranking executive who has the full responsibility for the company activities. He is involved not only in day-to-day operations (like a President) but also in a long-term strategy.

Another interesting approach to determine who is a CEO was found in the work “What Do CEOs Do?” (Bandiera et al. 2011). In this article authors based on the jobs performed by the Chief Executive Officer defined the CEO as a connecting element between the internal world of the organization and everything that lies outside it.

The CEO position in the Russian companies, however, is not so well defined, as in the western countries. Article 69 of the Civil Code of the Russian Federation[1] states that the company's current activities are managed by the company's sole Executive body (Director, General Director). There is no one unified way of CEO naming methods - in Russia the leading manager of the company can be called differently on the wide specter from "director" to "president". These naming conventions also extent to the CEO roles, as it is common for CEO liabilities and requirements to be different from one Russian company to another. This way, the impact of CEO actions is not the same for each company. These facts are common for the emerging markets and are always present in related researches, not conflicting with the overall results. This way, we state that there are some differences between the findings for the developed countries and the one, that is going to be discussed in our work, which provides more value to the results we are aiming to get. Additionally, as the naming conventions for the Russian market are not well-defined, we will keep to the notion of CEO in our further research.

Another important dimension for analyzing the notion of a CEO is definition of what Chief Executive Officer is responsible for. Main responsibilities of a CEO lie in the field of developing and implementing high-level strategies, elaborating major company decisions, managing overall operations of the company and being the main bridge between the corporate operations and board of directors. As Jain and Yadav (2017) claim, this is a CEO who is responsible for the success or failure of the company that's why it is really important to choose a right person for this position. Further, for the better visibility and understanding let us make a list of most important responsibilities of a CEO according to these authors:

- CEO should be a good leader and make the necessary effort to lead the company to success
- CEO needs to pay due attention to the managing of human resources so that they are coherent to the laws and regulations and, not to forget, the working atmosphere of the company
- In civic, state or national level events CEO should be a worthy representative of the organization he works in
- CEO definitely should request an advice and guidance from Board of Directors if necessary. Also, he needs to exercise interactions between Board of Directors and company managers. And, of course, CEO should be clear and honest in reporting and do not hide information about the actions of the company from Board.

[1] Article 69 of the Civil code of the Russian Federation. Federal law " On joint-stock companies". http://www.consultant.ru/document/cons_doc_LAW_8743/5eeca37d32631b03fa76580dfad0bc508823836a/

While investigating various sources on this topic we came across another interesting approach to defining CEO responsibilities which, of course, is somewhat similar to the previous one, but has its own features (Free Management Library). The author highlights 6 main responsibilities:

- Board Administration and Support - provides interaction between the Board of Directors and employees of the company, supports the assessment of the Board by the chief executive
- Program, Product and Service Delivery - oversees all stages of creating a product or service provided by the company that he or she heads
- Financial, Tax, Risk and Facilities Management - coordinates the budget with the Board of Directors, competently manages the company's resources within the established budget and in accordance with current legislation
- HR Management - manages human resources of the organization in accordance with human resources policies of the firm and in accordance with current legislation
- Community and Public Relations - ensures that the company itself, its mission, programs, products and services provided by the company presented in a positive light to appropriate stakeholders
- Fundraising - oversees the planning and implementation of fundraising events, identifies resource needs, investigates potential sources of funding, and develops a communication plan with sponsors.

Also, it may be interesting to understand what role plays CEO in the company since it defines what purpose has a person in organization. So, analyzing the literature we found that CEO is responsible for managing the organization and for the process of delegating authority from the Board of Directors (Role of chief executive officer or managing director). There is a set of roles which are associated with the job of Chief Executive Officer. Author highlights several of them and explains the tasks performed by the CEO which are attributed to these roles (Free Management Library).

One of the mail roles which CEO plays in the company is “Leader” since he or she should lead the organization, express and communicate to each other the interests of the Board of Directors and employees of the company. CEO is responsible for seeking the opportunities for the company in the future and also, he or she represents the company to the public.

Another role which is described by the author is “Decision Maker” since CEO should formulate policies for the company and plan recommendations to the Board of Directors. Also, CEO sets and decides in which direction and how the company's employees will work.

CEO also plays a role of “Manager” since he or she should of course manage operations of organization he or she leads, embody the established plans, manage all human resources of organization and, finally, operate financial and physical resources of organization.

The last role assigned by the author is “Board Developer” and it consists in the fact that the CEO participates in the choice and appraisal of members of the Board of Directors and supports Board's evaluation of Chief Executive.

Another work which investigates roles that CEO plays in the company is “The Role of Chief Executive Officer” by Glick (2017). The article aimed to cover the gap and explain what is known in reality about the role of CEO. By using the inside information provided by CEOs themselves, author managed to find that existing well-known list of roles that are attributed with CEOs (like Monitor, Commander, Leader, Motivator and etc.) is very limiting and did not cover the whole spectrum of roles in which CEOs are expected to be engaged in. Very interesting finding is that some respondents believe that if they want to perform an optimal job, they need to solely do all the roles included on the survey.

Further in the paper we are going to investigate the most discussed traits of the CEO and how they are interconnected with company performance.

1.2. Demographic and behavioral characteristics of the CEO and other characteristics that affect the company's performance

Due to the importance given to choosing a CEO for the company, it is interesting to study the theoretical aspects of the characteristics that a CEO should have. During the working process concerning this topic always comes up a question about why we should even consider CEO traits in measuring the performance of a company? The answer is quite simple – because the set of demographic and behavioral characteristics of the CEO affects his or her decision-making process that, in turn, directly affects the profitability of the organization (Hambrick and Mason 1984).

In virtue of this analysis, it will be possible to study this topic more deeply and to apply on practice the conclusions obtained during the analysis. Despite the fact, that there already exist many works concerning this topic most of them are aimed at investigating foreign markets. We will try to formulate a general idea based on the already existing research and to make conclusions

about how applicable obtained results will be for companies in the Russian market. The works on this topic also focus on what traits a CEO should have in order to perform better. In other words, what set of socio-demographic characteristics of a CEO can be most important for the successful management of the company and, as a result, for the good company performance? So, in order to understand which CEO traits we will use in this work, we need to look at articles analyzing the same topic. We will investigate which parameters were considered worth paying attention to by the authors and then will make our own sample.

Quite a widespread parameter which is used in the works on analyzing the traits of CEOs is experience (Serra, Três, and Ferreira 2016). It reflects how the CEO perceives the world around him and how he uses the knowledge he or she already has. The older the CEO is the more experience he possesses for the evaluation of given information (Diks 2016). There is an evidence from the study that more experienced CEO brings additional value to the company as he speeds the decision - making process. But authors of this article claim that not only a level of experience will matter but also its diversity. We cannot argue with that, because experience from different fields of activity allows a person to push the existing boundaries of thinking and make more extraordinary and winning decisions that have a positive impact on the company's activities. In this article as a proxy for experience authors used age of a CEO because it reflects the level of knowledge that CEO accumulated through all his life.

Nevertheless, there are number of articles which argue that age of a CEO is negatively associated with company performance because as CEOs get older, they act more in their own interests than in the firm's ones or they are more conservative in their actions which limits the future possibilities for the company (Bertrand and Schoar 2003; Han 2014; Zhang 2010). Another concern related to the CEO's age is that as the CEO gets older, they are less likely to bring new ideas to the company which can limit the future growths of the company (Hambrick and Mason 1984).

More younger CEO is better for the company since he or she completed education more recently and that’s why possesses more technical skills compared to more older peers. Another reason is that younger CEOs have more active mind and are more able to adapt to changing environment. There is an opinion that older CEOs (in pre-retirement age) manipulate the company's performance in such a way as to increase their own profit. Dechow and Sloan (1991) found out that in his or her last years as CEO a person can manipulate short - term earnings performance of a company by reducing R&D expenditures in order to increase own compensation and benefit him or herself.

So, as we can see from the literature there are different opinions concerning the CEOs age and its effect on company`s performance – younger CEO are less competent but they are more open to changes in the company, find a common language with the majority of workers of different age groups, because they are equally close to all groups and are more open to innovation and technology. Based on the ideas above we are going to test the following hypothesis:

H1: Age of a CEO is negatively associated with company performance.

Despite the fact that experience is quite important parameter, it is also worth considering how competent the CEO is in what he or she does. This competence can be measured in different ways. For example, authors of the article "The 'CEO' Effect on the Performance of Brazilian Companies: An Empirical Study Using Measurable Characteristic" (Serra, Três, and Ferreira 2016) measure this as the presence of a specific experience, related to the characteristics of the company and some technological competence which were measured by the CEO`s tenure and engineering education. Other authors suggest that level of competence can be measured by the level of education (Hambrick and Mason 1984) because more educated CEOs tend to use more thorough and thoughtful business practices. Also, better education fosters the continuous desire to achieve higher managerial skills which will help to manage the organization even in difficult periods (Saidu 2019).

There is an opinion that education benefits not only individuals, but also society as a whole (Krueger and Lindahl 2001). This may be due to the fact that educated people are more attentive to the issues of social welfare and environmental protection (Meyer 2015). Talking further about the impact of education of the Chief Executive Officer, there is also an opinion that more educated CEOs reduce the company's environmental footprint by promoting corporate energy efficiency and making greener private decisions (Amore et al. 2019). This, in turn, influences the market perception of the company which is considered in market-based performance of companies. This point should be less influential in the emerging markets, but it is nevertheless should be considered.

So, in our work we will take additional educational degrees (doctoral and candidate) as a proxy for the competence of a CEO:

H2: Additional educational level (candidate and doctoral) is positively associated with performance of a company.

We also believe that if the education was related to the same industry in which the company operates or if the person received an economic or managerial education, which gives him or her competence in the field of enterprise management, it makes the CEO even more competent for his position which, in turn, is good for the company. The work "What's in an education? Implications

of CEO education for bank performance" (King, Srivastav, and Williams 2016) concentrates on the importance of different aspects of CEO education in regard to the performance in banking sector. In a sense, this work is quite similar to ours, though it is a bit more specific and narrower, focusing both only on one industry sector and only on one dimension of a CEO characteristics. One of the most interesting points, that the authors are concerned with is the quality of education, specifically how well it fits with the CEO requirements. The researchers claim that presence of relevant education leads to the ability to manage huge and complex organizations, which the analyzed education provides. They specifically underline that relevant education provides the general managerial knowledge, which allows the CEO to choose the appropriate policies, and the specific narrow skills, allowing for better risk consideration and as a result relevant education of a CEO, meaning either in Management, Banking or Finance, leads to the higher performance of the bank. This paper is one of the very few investigating the benefits that come from the relevant education of the CEO and it is also concerned with the analysis of the developed market of United States. These facts show that there exists the research gap and it is both interesting and valuable to try and analyze the interconnections between the relevant education of the CEO and the performance of the firm he or she leads. We should note that the concentration on just the banking sphere narrows down the number of appropriate educational backgrounds and for a different industry this list will be expanded by those degrees, that involve more technical backgrounds. This decision is supported by the article (Cimerova 2012) where the author analyzes the technical education of a CEO linking it to the innovation capabilities of a firm, as the CEO with the technical background is more likely to adapt some state-of-the-art technologies in the operations of the firms. The deep knowledge of the specifics of operations also allow for better understanding of the risks that come with them, influencing the risk profile of the CEO. This analysis indicated that we need to widen the notion of the relevant education to not just include managerial and business-orientated ones, but to also take into account those CEO, that graduated from schools that provide the technical education, that fits the industry of the company.

This way we can state that it is valuable to capture the effects of relevant education of CEOs. This is specifically interesting in regards to underdevelopment of this topic in analysis of emerging markets. So, in our work we will use binary variable which would take a value equal to 1 if CEOs got relevant education. We formulated the following hypothesis:

H3: CEO with relevant education is positively associated with company performance.

There is also an opinion that studying abroad is quite beneficial for the experience and personal development of a person (Dwyer and Peters 2017). It allows you to get many advantages such as:

Personal Growth - studying abroad allows to develop self-confidence, develop self-reliance, independence and overall maturity. Also, studying abroad allows one to expand personal network of acquaintances and friends and develop communication skills.

Intercultural Development - studying abroad is aimed at developing respect for all cultures, allowing students to learn more about the culture of their own country and the culture of other countries. By allowing students to learn in the culture of another country while communicating with representatives of even more countries, this develops respect for all cultures and encourages students to defend the interests of not only their country, but also the whole world thus bringing not only personal, but also a lot of social benefits. Therefore, we decided that it makes sense to also consider whether the CEO has received an education abroad as one of the dimensions of measuring CEO`s competence and include such CEO characteristic as the fact of studying abroad.

Also, we believe that competence of a CEO in current position is affected by the previous experience in a managerial position. Thus, for example, Elsaid, Wang, and Davidson (2011) believed that CEO`s previous managerial experience helps to provide a clearer picture of the situation at the company and how to positively change it. This experience serves as a vital sign of efficient CEO performance – it allows him or her to better understand risks, capture necessary opportunities and make decisions in a timely manner. It is also quite valued by the employers of a CEO both in terms of monetary compensation and in ease of employment. But at the same time there are some possible negative effect that previous CEO experience could not translate well into the future success and the skills that come from the experience of being the CEO in one particular company could not apply to all other firms in the same manner. Nevertheless, authors believe that positive effects of previous managerial experience outweigh the possible negative ones and they managed to prove that market perception of the appointment of CEOs with previous managerial experience is positive. Based on this we are going to test the following hypothesis:

H4: If current CEO was previously a CEO in other company(-ies) it will have positive interrelationship with the company performance.

In addition, there also is an opinion (Hamori and Koyuncu 2015) that overabundance of experience may lead CEOs to overvalue the impact on the performance. In other words, they may consciously or unconsciously, believe that the actions they did before will also lead to success in another company. But it is very often not the case, as every organization and situation are different and there is no fit-all solution. This point is further confirmed by the fact, that CEO that came from different backgrounds are not related to lower performance - they are less likely to be dependent on their previous success story as the new firm is apparent to be different to the previous ones. The

authors also state the importance of distinguishing the CEO experience from the experience on other positions. Their results show that if the CEO joins the company previously working in the comparable company, but not as the CEO, then there will be no negative interrelation with the performance of the firm. This finding underlines the importance of distinguishing the prior CEO experience to just the working experience, as they are not the same and the later one involves success fallacies to a lesser extent.

The findings from "Career Experience and Executive Performance: Evidence from Former Equity Research Analysts" (Huang et. al 2019) show how different working experience influence the CEO actions. The authors state that each background differently influences the decision-making process of a CEO – the person who was more connected to the nuances of how the companies operate will be able to better control the operational risks when the person becomes a CEO. The research proofs that CEOs with the experience in Equity Research are not just interrelated with higher levels of performance, but also significantly improve the effectiveness of M&A transactions. Overall, authors state that it is important to consider the working background of a CEO – usually the more diverse it is the better. It is better to have a relatively small amount of experience in different spheres, than to be concentrated on just one or two spheres, as the person in this case becomes too dependent on the routine actions. These conclusions do not only apply to just different industries, they also concern the experience in different companies and on different job positions. This way we should not exclude the important effects of the CEO having various experiences in a number of different firms. This way we also decided to account for CEOs working experience and include this characteristic into our analysis and compare results from the study on US companies with the results on Russian market.

Another interesting parameter which will also affect the performance of a company is how much time CEO worked in the company. A best proxy for this is tenure (Serra, Três, and Ferreira 2016). Also, tenure (and age) was used by Chang, Huey, and Lin (2015), and others used tenure in order to measure managerial style of a CEO and his managerial efficiency. Hambrick, Geletkanyc, and Fredrickson (1993) found that CEO who holds his position for a long time (rather big tenure) is more committed to the organization but is not inclined to implement innovation and some technological novelties. And as we found out implementing of innovations is rather crucial for a company development since it is positively associated with firm performance due to the fact that innovations are considered very important sources of stable and long-term competitive advantage (Atalay, Anafarta, and Sarvan 2013) and also will contribute to a greater economic performance, higher growth and improved employment conditions (Jong et al. 2003). That's why we can suppose that if there is a factor that prevents the development of innovations in the

company, it may not affect firm performance in a positive way. But still Russian market is not very innovation-driven in the major extent, making the negative effects of low innovativeness of CEOs with high tenure less crucial. Also interesting finding of Serra, Três, and Ferreira (2016) is that CEOs tend to find a successor like himself and if a firm faces a non-innovative conservative CEO and wants to replace it, the future CEO should not be chosen by the previous one in order to avoid stagnation at the point where the firm does not develop and improve its efficiency. There is also a finding that the longer the CEO has worked in the company, the more time he or she needs to influence the firm which sometimes can be perceived as ineffective (Van der Mark 2013).

There is also an opinion that in the earlier tenure of the CEO's, there is a higher level of Corporate Social Responsibility of the company, and there is a negative relationship between CEO`s tenure and CSR performance of the company. This relationship follows from horizon problem - when with the increase in tenure in the company (similarly with the increase of age), managers put less effort into effective management of the company aimed for the long term perspective and are less interested in firm`s strategy (Wanyu, Gaoguang, and Xindong 2019).

But still we should note here that there are some opinions that tenure of a CEO is positively correlated with the firm performance because the longer CEO works in a company the better knowledge he has and the better decision he makes. It was also found that bigger tenure of the CEO indicated that he or she has more power in the company which, in turn, leads to better stock performance (Adams, Almeida, and Ferreira 2005).

Since opinions about this trait are rather controversial, we would like to test the hypothesis that the more years a CEO holds his or her position the better will be the performance of a company.

H5: Tenure of a CEO has positive interrelationship with company performance.

Further interesting point to consider is the marital status of a CEO and what influence it will have on decision-making process of a CEO and, as a result, on the performance of the company? Results of the work on this topic show that married CEOs are more involved when it comes to social issues compared to non-married colleagues (Connley 2019). The beneficial effect of being married is explained by the fact that married people report better and stronger mental health. It was also found that after marriage, men became more conscientious, while women's level of neuroticism decreased (Loria 2018). That’s why married people tend to make more intelligent and thoughtful decisions. For example, they are more ready to hire or promote women, disabled people or people of any race or ethnicity. Research also shows that married CEOs are more open to implementation and change of the policies for the LGBTQ community. Thus, if the corporate

culture of the company is aimed at comprehensive maintenance of tolerance, then it makes sense to consider a married person for the position of a CEO.

Another interesting opinion concerning marital status of a CEO is that it affects corporate social responsibility (Shantaram and Mishra 2019), which stands for social accountability of a company and evaluates the effects of business on a society as a whole (Höllerer 2012, 29-66). This influence can be explained by the fact that marriage induced revaluation of values of a CEO which leads to increase in the care not only for yourself, but also for the people around. There is also a finding that if a company is led by non-married CEO, it demonstrates higher stock return volatility and conduct more aggressive investment policy. In other words, non-married CEO express more riskier behavior (Roussanov and Savor 2014). These notions are also spread across different markets, there are no differences in the effects of CEO family position between developing and developed markets and this way we can expect positive interrelationship between marital status and performance of Russian companies. So, taking into consideration all of the above opinions concerning the beneficial effect of marital status of a CEO on his or her decision – making process and as a result on the image of the company we decided to formulate the following hypothesis:

H6: If CEO is married, it will have positive interrelationship with the company performance.

We decided to construct the table that shows what characteristics were used to build a hypothesis about the relationship with the company's performance, whether such a characteristic was used in research on a similar topic, and for what reasons we built such a relationship between the characteristic and the performance. The table was done in order better represent main points from the literature review and to once again stress readers attention to our reasoning (see table 1).

Table 1

Summary of the reasoning for constructing hypotheses

Hypothesis	**CEO trait**	**Has this characteristic been used in researches on a similar topic?**	**How does this characteristic relate to the decision-making process of a CEO (thus influencing company performance)?**
H1: Age of a CEO is negatively associated with company performance	Age	Age was used in a number of works on developed markets (Chang, Huey, and Lin 2015; Han 2014; Zhang 2010; Diks 2016).	With the age CEOs act more in their own interests than in the firm's ones, are more conservative in their actions which limits the future possibilities for the company (Bertrand and Schoar 2003). With the age CEOs are less likely to bring new ideas to the company which can limit the future growths of the company (Hambrick and Mason 1984). Older CEOs (in pre-retirement age) manipulate the company's performance in such a way as to increase their own profit. Dechow and Sloan (1991). Based on these reasonings we make an assumption about negative interrelationship between this trait and company`s performance.

Hypothesis	CEO trait	Has this characteristic been used in research on a similar topic?	How does this characteristic relate to the decision-making process of a CEO (thus influencing company performance)?
H2: Additional educational level (candidate and doctoral) is positively associated with performance of a company	Additional level of education	Most often in similar works on developed markets authors used number of years of education (Serra, Três, and Ferreira 2016, Diks 2016). In our case, we used different dimension such as additional levels of education which was not considered in the researches before and was added to fill in the research gap.	Better education fosters the continuous desire to achieve higher managerial skills (Saidu 2019). More educated CEOs tend to use more thorough and thoughtful business practices (Hambrick and Mason 1984). More educated CEOs reduce the company's environmental footprint by promoting corporate energy efficiency and making greener private decisions (Amore et al. 2019). Based on these reasonings we make an assumption about positive interrelationship between this trait and company`s performance.
H3: CEO with relevant education is positively associated with company performance	Relevant education	Was not considered in the researches before and was added to fill in the research gap	Relevant education provides the general managerial knowledge, which allows the CEO to choose the appropriate policies, and the specific narrow skills, allowing for better risk consideration (King, Srivastav, and Williams 2016). Based on these reasonings we make an assumption about positive interrelationship between this trait and company`s performance.

Hypothesis	CEO trait	Has this characteristic been used in research on a similar topic?	How does this characteristic relate to the decision-making process of a CEO (thus influencing company performance)?
H4: If current CEO was previously a CEO in other company(-ies) it will have positive interrelationship with the company performance	Previous managerial experience	Was not considered in the researches before and was added to fill in the research gap	Previous managerial experience helps to provide a clearer picture of the situation at the company and how to positively change it, to better understand risks, capture necessary opportunities and make decisions in a timely manner (Elsaid, Wang, and Davidson 2011). Based on these reasonings we make an assumption about positive interrelationship between this trait and company`s performance.
H5: Tenure of a CEO has positive interrelationship with company performance	Tenure	Tenure was used in a number of works on developed markets (Serra, Três, and Ferreira 2016; Chang, Huey, and Lin 2015)	The higher tenure of the person the more committed he or she is to the organization (Hambrick, Geletkanyc, and Fredrickson 1993) Bigger tenure of the CEO indicated that he or she has more power in the company which, in turn, leads to better stock performance (Adams, Almeida, and Ferreira 2005). Based on these reasonings we make an assumption about positive interrelationship between this trait and company`s performance.

Hypothesis	CEO trait	Has this characteristic been used in research on a similar topic?	How does this characteristic relate to the decision-making process of a CEO (thus influencing company performance)?
H6: If CEO is married, it will have positive interrelationship with the company performance	Marital status	Was not considered in the researches before and was added to fill in the research gap	Married CEOs are more involved when it comes to social issues compared to non-married colleagues (Connley 2019) Married people tend to make more intelligent and thoughtful decisions (Loria 2018). Marriage induced revaluation of values of a CEO which leads to increase in the care not only for yourself, but also for the people around which in turn is good for the company (Höllerer 2012, 29-66) Married CEO express less riskier behavior (Roussanov and Savor 2014). Based on these reasonings we make an assumption about positive interrelationship between this trait and company`s performance.

Another interesting observation that is related to the marital status of the CEO is what impact the appearance of a child has on CEO`s managerial behavior. Dahl, Dezső, and Ross (2012) had found that if male CEO becomes a father, he starts to pay to his employees less. Moreover, if a CEO`s newborn is a boy it has more negative effect on employee`s wages compared to the birth of a girl. Last interesting finding is that male CEOs tend to increase his own salary after having a child (especially a boy). These findings were explained by the psychological need of any human being to accumulate more resources for the well-being of the family. Representative data for this variable is quite difficult to get because in Russia people do not advertise information about their children on the Internet.

There is also an opinion that if the Board of Directors wants to preserve the already established culture in the company and the way the company is managed, it should choose a successor with the same set of socio-demographic characteristics as had a previous CEO. According to the authors (Zajac and Westphal 1996), a successor from a different age category, with a different educational background, or with a different work experience is likely to have other personal style, other leadership qualities and, thus, quite different opinion towards solving strategic issues. But despite the peculiarities of this variable we decided not to use it since it employs different methodology.

Some authors stress reader`s attention to the fact that gender of a CEO can have an impact on company performance. This is due to the differences in approaches to problem solving as well as differences in the psychology of men and women. For example, it is commonly believed that women are more emotional and empathic compared to men (Liu and Nguyen 2020). Also, female CEO`s are less risky and less overconfident (Levi, Li, and Zhang 2014). The advantages of the latter are that in this case, women are less likely to place too high expectations on themselves, thus more soberly assessing opportunities and prospects for the company.

Next work which investigates the role of gender is "CEO Gender: Effects on Valuation and Risk" (Martin, Nishikawa, and Williams 2009). This article will help us to understand to which extend CEO gender is important in measuring of company performance. Authors examined which effects the appointment of a female CEOs will have on the capital market measures of valuation and risk compared to the appointment of a male CEOs. It was interesting for authors to found out if gender of a CEO has an influence on capital market measures of valuation of the company. Authors` hypothesis was that female appointment leads to a lover valuation effect (due to the stereotype that women are less competent). Also, authors assumed that female appointment leads

to the decrease in risk because women are more risk averse. The results of this work showed that market participants do not see female CEO as less competent. In other words, financial market equally perceives the appointment of both female and male CEOs. But still, the hypothesis about riskiness was true – risk following the female CEO appointment is lower compared to male ones. The gender of a CEO is also considered to be a desirable variable in such studies, and we will not deviate from this trend and also include this variable in our analysis.

Another interesting feature of Chief Executive Officer was identified by the Boivie et al. (2011). According to their opinion, the CEO who identifies him- or herself with the organization he or she leads is more likely to perform better at his or her duties. This factor of organizational identification is responsible for the CEO's desire to act in the best interests of his or her organization (even if these interests will not affect in any way or even are at odds with his or her own ones). We should mention here, that such characteristic of a CEO should at least be discussed because the topic of organizational identification itself is quite popular, and many authors note its importance since if an employee of any organizational level determine him- or herself with his or her organization it is positively correlated with the work performance of this employee (Schuh et al. 2016; Dukerich, Golden, and Shortell 2002) but since to get information for this variable, we need to apply a different methodology, we will not directly include it in our work.

Due to the fact that there still is a room for investigation regarding the question about which set of characteristics would make a CEO a suitable candidate for the post, many CEOs get fired (instead of voluntary leaving the job). From the name of the article "Up to half of exiting CEOs don't quit. They get fired" (Sahadi 2019) we can clearly see the justification of what was written earlier. There is a problem that even though the news say that the company announced that its CEO is leaving, the truth is that a CEO got fired. This mean that he or she doesn't fit expectations or didn't perform as expected from him or her. So, why did it happen? We believe that one of the reasons is because company didn't know from the beginning what exact traits its CEO should have and that's why having "not fit" person leads to his or her dismissal. This means that there exists a problem that company from the beginning was wrong considering that candidate with that set of characteristics will be suitable. So, there is a problem that companies don't know what kind of a person they are looking for. Moreover, as a result of this CEOs firing company faces huge problems which may last for several years so this inappropriate CEO negatively influenced company`s performance even in a long run.

And how to avoid these situations? Let's have a look at article "How to avoid firing your CEO?" (Clarke 1999). In this article author states that in order to avoid the situation of CEOs firing the company (board of directors) should notice the early signals of a problem and agree on the fact

that there is indeed a problem with existing CEO and also should help its CEO to avoid failure (e.g.: “coaching measures”) or, as a last resort make a replacement planning. But to our mind, one of the main steps in order to avoid a problem of CEOs firing and dealing with the problems which would arise after this redemption is know in advance what characteristics a CEO must have in order to suit the company.

It is not surprising, that currently, many companies are very serious about choosing their CEOs. As we know, even during the college education, students are invited to undergo various case studies and interviews that will reveal their leadership and managerial qualities that attract companies so strongly. Any company is interested in the fact that its CEO – head and top executive – has at least these characteristics because the work of the company and its success depend on the work of the CEO. So, as we can see, there is no doubt that the choice of CEO is very important for every company and the process of screening should be based on relevant traits of the candidates and corresponded important factors.

We can see that some companies believe that only a man can be a CEO while others do not see in this role no one but a woman. Some employers assume that work experience is a key element for a manager, while other companies choose instead young professionals, relying on their ambitiousness and innovativeness. They see these young specialists like a breath of fresh air which can improve the situation in the company. It also often the question of whether it is better to hire a CEO from abroad or he or she should be a native citizen who know the culture of the country and way of doing business in it. So, there is no doubt that CEOs are very important for a company, and their personal traits should be deeply analyzed to make sure that they are suitable for this position. In our work we are going to analyze which traits of CEO influence companies in Russia the most, and this way we can provide some practical knowledge that will help to choose the most efficient CEO.

Also, given the fact that not only the internal characteristics of the CEO will affect the company's performance, it is worth paying attention to other factors and discuss them as well.

Thus, another interesting point to look at is the process of selection, replacement and an approach to determining the amount of compensation of a CEO. Reasoning on this topic leads us to another article where author shared his thoughts on this issue (Zajac 1990). Author argued that previous researches were conducted on the outdated data and that’s why he was trying to extend the existing research by analyzing more “complete conceptual model of the relationship between CEO-related issues and firm performance”. In other words, he was interested in how CEO selection, succession, compensation will influence the company`s performance. Zajac (1990)

succeed to confirm the fact that firms whose CEOs came from inside of the company are generally more profitable. That`s why we also decided to include this parameter into the analysis. Also, the fact that CEO should keep in mind his successor will affect the profitability of a company in a positive way. Concerning the effect of the level of compensation on the company's performance, the results show that it not a statistically significant predictor. This article drives attention to the fact that it is important to build the analysis not only on historical data, but also on primary data provided by the CEOs themselves, but we should point out here that these approach may cause some troubles due to the fact that CEO`s answers may not be precise due to the human nature to hide some information or make it look not the way it is in reality or some other reasons. Also, this article examines additional characteristics concerning CEOs performance in the company - like compensations and selections - and that's why gives us more information for the future research.

Also, some authors consider the dynamic in sector to which the company belongs (Serra, Três, and Ferreira 2016). According to them, this is important to take into account in order to more correctly interpret the obtained results. So, for example, for a more dynamic industry more appropriate is to look for CEO with greater experience and competence because being such a person he or she will be able to make the right decisions even in a dynamic environment.

Some authors also believe that industry to which company belongs has correlation with CEO traits. In the article "CEO Characteristics: Does Industry Matter?" (Rajagopalan and Datta 1996) we found another approach to such analysis. The aim of this study is to analyze how industry factors explain the variation in CEO characteristic and the performance implications of such variations. So, this paper examined the relationships between key CEO characteristics (firm tenure, education and etc.) and different industry characteristics. The results of this study show that industry factors play little role in explaining of the variation in CEOs characteristics. Nevertheless, we would like to include the variable for the industry belonging to analyze whether there are any effects onto our results.

Also, in some researches was considered such CEO`s trait as attitude towards risk because this parameter has a great influence on firm`s financial decisions. This parameter is suggested to be measured by a level of CEO`s compensation (Chang, Huey, and Lin 2015). Authors managed to find that if CEO gets higher compensation, he or she will minimize risk-taking behavior which tends to have a negative effect on earnings performance.

When considering whether to put as a CEO a person from the company (insider) or hired from outside (outsider), researches note that the outsiders are more interested in improving the company's performance because they possess the knowledge and competencies which insiders do

not have (Khurana and Nohria 1999). In other words, hiring someone outside of the company promotes the exchange of knowledge and competencies between organizations and facilitates the globalization of corporate culture (Boeker 1997). Performance of the company tends to be improved because newcomers have the opportunity and desire to reshape existing communication relationships, existing way of thinking and existing methods of interaction with all units (Bantel and Jackson 1989). This reasoning once again encourages us to take into account the fact whether the CEO was inside or outside the company.

As we can see, the CEOs are very important for the company and even, as some authors said, are the main drivers of company performance. Therefore, it is also important to follow the emotional and professional state of the CEO and in time catch the moment when the burnout occurs. But what exactly is a burnout? This state is manifested by increasing emotional exhaustion and reduced professional efficacy and is a response to the chronic work stress. People whose work activity is associated with regular communication with other people, emotional empathy and great responsibility are especially susceptible to this state. And, as we can see from the range of responsibilities of a CEO, they are always under the risk of a burnout. As authors of the article "CEO burnout, managerial discretion, and firm performance: The role of CEO locus of control, structural power, and organizational factors" (Sirén et al. 2018) stated - the burnout of a CEO may occur also due to the non-contingent rewards (not only material but also psychological) and punishments which occurs to the CEO as a result of non-expected firm performance. These factors lead to the reduced sense of personal accomplishments and depersonalization which are the main signs of burnout. Also, there is a concern that burnout may lead to work exhaustion and to the fact that the CEO loses self-confidence and thus not so effectively solves work issues. The effectiveness of CEO`s goals achieving is also negatively affected (Nurmi et al. 2008). That's why we can say, that one of the main characteristics which CEO should have – is a stable psychological state and the ability to work in very stressful environment. So, since the CEO holds a very high position in the company, he or she is exposed to a lot of pressure which, in turn, has a negative impact on his decision-making process and consequently on company's` performance. That is why it is worth discussing such variable as CEO burnout. But here we need to point out that information about emotional state of CEO and other characteristics according to which we can make conclusions about burnout can be obtained only through surveys or face-to-face interviews. And this information can be biased and not precise and thus will lead to wrong conclusions.

Summing all up we can say that despite the fact, that characteristics which were described above are quite interesting to explore, it is quite difficult to get information on all of them, so we will not use all of the abovementioned variables in our study.

Further, we will analyze which variables are most often used as control ones and which as dependent ones in order to conduct research on evaluating the company's performance.

The most common variable is a size of a company. As a proxy for this Chang, Huey, and Lin (2015) used the value of total assets. Same total assets were used as a proxy for firm size by Diks (2016) and Roussanov and Savor (2014). Also, authors considered the age of the company and a type of control of the company. Also, some authors suggest considering a level of governance in companies (Van Essen, Engelen, and Carney 2013) because this will have an influence on company decisions hereby influencing its performance. In our work we are going to use size and age of the company, also we will include the value of leverage.

We also found that Market-to-book value can be used as a control variable in order to control for the strategy and growth opportunities of the company (Liu and Nguyen 2020). So, we believe that it will be also good to include MTB value as a control variable.

Thus, given all analyzed researches above, we see that CEO characteristics influence their decision-making process and, accordingly, are important for the company's operations. It is evident that there are already ideas about such CEOs characteristics as gender, age, their level of compensation, even relationships with colleagues. But still, many aspects remain unexplored or insufficiently explored. So, we believe that there is still an unsolved gap about what exactly companies should look at choosing their CEO. For example, in article «CEO Traits, Corporate Performance, and Financial Leverage» (Chang, Huey, and Lin 2015) authors use quite big set of variables which gave them interesting results but still don't look at interconnections between traits rather than with cash compensation and many characteristics still remained unexplored. And this is what our work is dedicated to - expand the range of already known characteristics that a CEO should have in order to positively affect company performance.

1.3. Performance of a company: its importance and approaches to its definition

Before evaluating the relationship between set of parameters we first of all need to understand the theoretical features of all the indicators involved. Thus, in order to assess the impact of the CEO's characteristics on the company's performance we should figure out how to measure this performance. To understand this is really necessary, because evaluating the company's performance is very essential for effective management of the company (Demirbag et al. 2006).

One of the fundamental tasks of strategic management is to maximize the use of resources in accordance with the organization 's goals. Strategic management is aimed at long - term goals rather than daily operations which will strengthen the viability and power of the organization in

relation to its competitors (Murugesan et al. 2016). But we should not forget about another important task of strategic management, namely – evaluation of the degree to which company meets all it`s set goals or, in other words, companies` performance. Previously researches had found that companies that based their decisions according to strategic management are more successful (their performance is higher) than companies that do not incorporate strategic management`s principles into the decision-making process (Pekar and Abraham 1995). Thus, we can say that evaluating the company 's performance is very important in context of any decision-making process.

It is not a secret that in today's world every company strives to be competitive and profitable. In literature there is an opinion that the direct way to improve companies` performance, or at least sustain it at the proper level is to introduce innovations into the work of the organization (Taouab and Issor 2019). And from the previous part of our research we see that the innovativeness is largely connected to the actions of CEO and, by extension, to his or her characteristics.

Nowadays many researchers use company performance as the dependent variable, but in order to use it one should first of all define the notion of the performance of the company. And this is exactly the place where the question arises, since there is no general agreement on how to define the company's performance in the only correct way, and each author defines company performance in his or her own way applicable to his or her research.

In many studies in order to describe performance of the company in some cases authors used the word "efficiency of a company" and in other cases - the word "effectiveness of a company". A good solution was suggested in the article investigating measurements of firm performance's dimensions (Al-Matari, Al-Swidi, and Fadzil 2014), who defined the performance of a company as result of measuring both efficiency and effectiveness of the firm. We consider this approach to the definition to be quite logical as it allows us to look more broadly at the results of the company's activities and cover all results of its operations.

There is also an opinion that the company's performance is described by some improvement in the business operations. These improvements are represented as a higher level of commitment and competence, more effective cost managing and overall organizational effectiveness (Vanhala and Tuomi 2006).

Murugesan et al. (2016) suggested multidimensional approach to defining company performance. According to this article, company`s performance should be measured as:

1. profitability performance;
2. market value performance;

3. growth performance;
4. employees' satisfaction;
5. customers' satisfaction;
6. environmental performance;
7. environmental audit performance;
8. corporate governance performance;
9. social performance

In much earlier works we can find another approach to define firm performance which coincides with what we found in much later works. So, company`s performance was described as fulfillment by organization as a social system its set goals without exhausting its funds and resources and without putting excessive strain on its members (Georgopoulos and Tannenbaum 1957).

So, we can see that since there are a lot of approaches to definition of company performance, much should be taken into consideration while measuring it. Further let us analyze quantifiable ways of defining performance of a company.

1.4. Approaches to evaluation of company performance

Currently in the works there are many approaches to understand what indicator best reflects the company's performance. For example, Venkatraman and Ramanujam (1986) used in their work three-leveled approach. Each level we will cover below:

1. Financial Performance - is based on the use of financial metrics that indicate the performing economic tasks of the company. Such metrics include growth of sales, profitability like ROA, ROE, ROS etc. But this approach is too finance-centric and does not account for meeting other goals of a firm.
2. Operational Performance - a broader approach that also accounts for operational indicators. Along with indicators mentioned above authors recommended to use non-financial indicators like product quality, market share etc.
3. Organizational Effectiveness - the outer circle of the diagram proposed by the authors which includes the two previous approaches, as well as the need to measure how firm meets its goals to satisfy the stakeholders.

Let us move to another article which investigates the topic of measuring the performance of companies (Serra, Três, and Ferreira 2016) where authors use a certain set of indicators which serve as a proxy for performance. Thus, Serra, Três, and Ferreira (2016) considered ROA and EBITDA (the same EBITDA parameter was used as a proxy for performance in the article

considering effect of CEO`s burnout on company performance (Sirén et al. 2018) arguing that these two variables will reflect both profitability in relation to investment and productivity and efficiency of a company. Chang, Huey, and Lin (2015) also used ROA and ROE as a measurer of firm performance.

Another article suggests 14 indicators which best represent company performance (Balaji 1986). These indicators are grouped into profitability indicators, measurers of market position, changes in profitability and cash flow and growth of market share and include such indicators as Return on Investments, Return on Sales, Market share, Percentage Point Change in Cash Flow e.t.c.

Our work will be mainly based on the Financial Performance of the companies as many authors whose analysis was also concentrated on the evaluating of company performance used the same approach (Burja 2011; Agiomirgianakis, Magoutas, and Papadogonas 2011; Marinova, Plantenga, and Remery 2010).

Studying the question of which indicators should be used in order to evaluate the company's performance, it is worth noting that different authors suggest using both market and accounting indicators (Gentry and Wei 2010). Therefore, we will take a closer look at each of these two groups and based on the analysis of various opinions we will choose which approach to use.

1.4.1. Accounting indicators

Accounting indicators are calculated based on the data provided in the financial statements of organizations. One of the reasons for using accounting indicators is the availability of data and the ease of data collection for their calculation (Hirschey and Wichern 1984). The most common indicators are calculated based on the values of total assets, company's equity, revenue and net profit (net income).

Thus, the most common ratio among accounting indicators is the return on assets (ROA) for the definition of which we will refer to the textbook "Principles of corporate Finance" (Brealey, Stewart, and Franklin 2017). According to this work return on assets reflects the ratio of company's income which is accessible to investors per every unit of the firm's total assets. According to Jewell and Mankin (2012) the most mentioned and used formula – formula 1 - (40% of the textbooks analyzed by the authors used this formula) for calculating ROA is as follows:

$$ROA = \frac{Net\ Income}{Total\ Assets} \quad (1)$$

Another popular ratio is Net Profit Margin. This parameter indicates how much profit company generates per every unit of sales (Financial ratio formulas; Husna and Desiyanti 2016) and can be calculated using the formula 2:

$$NPM = \frac{Net\ Profit\ After\ Taxes}{Revenue} \quad (2)$$

The last accounting indicator for measuring performance is return on equity (ROE). It indicates which value of net income is returned as a share of shareholders' equity (Ahsan 2012). According to Monteiro (2006) return on equity is very important and investors should always pay attention to it. ROE allows to understand how effective is investors` capital in generating profit and is helpful in order to assess company's financial situation (Calamar 2016). That`s one of the reasons why we decided to consider this parameter. Return on equity is used in a number of studies for measuring company`s performance (Zhang, Yuan, and Zhi 2017; du Toit and Wet 2007). ROE can be calculated using the formula 3 (Brealey, Stewart, and Franklin 2017):

$$ROE = \frac{Net\ Income}{Equity} \quad (3)$$

The drawback of accounting indicators may follow from different accounting practices and related differences in calculations. The use of market indicators, in turn, provides a new and useful perspective. It allows us to evaluate the company not only in relation to its internal operations, but also in relation to how the company is perceived by the society outside the company. Thus, the authors of this article are also convinced that a more accurate analysis can be obtained using both market and accounting indicators (Hirschey and Wichern 1984).

1.4.2. Market indicators

In the article concerning relationship between accounting and market measures and firm performance (Gentry and Wei 2010) authors gave a deep insight into the question of which variable best measures the performance of a company. Authors of the article believe that the use of both these types of indicators will allow to assess the full picture. In the case of accounting measures, it will represent past or short-term performance and in case of market based – future or long-term performance. But still, authors argue that researcher should not unify both accounting and market-based indicators into a single financial performance measure. In order to measure accounting profitability authors suggested to use ROA, ROE and ROS. As for the market profitability, authors suggested market-to-book value ratio (MTB) and market return.

In order to calculate market indicators, one should use not only the information from the accounting statements of the company but also we need data from the securities markets.

For example, one of the frequently mentioned indicators - Tobin`s Q - is used as a market based performance measurer in many researches (Lloyd and Jahera 1994; Diks 2016; Singh et al. 2017) and was developed by James Tobin and William Brainard (Brainard and Tobin 1968). Despite the widespread use of this indicator there are number of approaches to calculate Tobins`s Q. For example, it can be calculated using the formula 4 (Brav et al. 2008):

$$Tobin`s\ Q = \frac{Market\ value\ of\ equity + Book\ value\ of\ debt}{Book\ value\ of\ debt + Book\ value\ of\ equity} \quad (4)$$

Most frequently mentioned approach to calculation is the ratio of the company's market value to the replacement cost of assets (Lindenberg, Ross 1981; Rajeev, Liang, and Parkash 2016). But since the replacement value of assets is hard to determine (Lindenberg, Ross 1981), many researches agreed that it can be assumed to be equal to the book value of total assets (Bartlett and Partnoy 2018). Thus, in modified equation we can put book value of the company's total assets (Chung and Pruitt 1994) in the denominator. If the value of the Tobin` Q is greater than one, the company's market valuation exceeds its book value and if this value is less than one, the market underestimates the company's assets. It may be due to the fact that market does not believe in the future growth of the company (Scharfenaker and Santos 2015).

Bartlett and Partnoy (2018) argued that using only simple q is not the best approach for evaluating a firm’s value. Here, it is worth noting that Tobin`s q indicator is not the only one indicator which we are going to consider and its use will not be the only main approach, but will allow us to take a broader look at the picture of market indicators. This indicator will be considered combined with other indicators (such as ROA and ROE and NIM) in order to strengthen the reliability of the research results. This is also why we propose to include in the set of market variables that allow us to measure the performance of a firm such an indicator as market – to - book value (MTB).

Market to book ratio is defined as the ratio of the stock market value to the company's book value. When this ration is high this indicates that the market is positively confident in the company's prospects (Sarwendhi and Samekto 2014). This ratio helps to understand how market values common equity or net assets of the company or how effective are managers at using the firm`s assets and how their actions contribute to the firm`s growth (Sharma et al. 2013).

Market -to- book can be calculated using this formula (5) (Brealey, Stewart, and Franklin 2017):

$$Market\text{-}to\text{-}book = \frac{Market\ value\ of\ equity}{Book\ value\ of\ equity} \quad (5)$$

Market-to-book value was used as a proxy for company`s performance in number of studies (Chang, Huey, and Lin 2015; Gentry and Wei 2010). That's why we will also consider this indicator as a dependent variable for our research.

So, from the analysis of the literature, we got quite interesting insights. We see that there are many approaches to defining a company's performance which, in turn, lead to the emergence of many different approaches for its assessment. In this work we will consider the financial performance of the company and we will use indicators that allow us to measure it, namely accounting and market-based ones. Also, we have studied various characteristics of the CEO and their impact on the company's performance. The analysis of research results and opinions of various authors allowed us to put forward the following hypotheses:

H1: Age of a CEO is negatively associated with company performance

H2: Additional educational level (candidate and doctoral) is positively associated with performance of a company

H3: CEO with relevant education is positively associated with company performance

H4: If current CEO was previously a CEO in other company(-ies) it will have positive interrelationship with the company performance

H5: Tenure of a CEO has positive interrelationship with company performance

H6: If CEO is married, it will have positive interrelationship with the company performance

These hypotheses were constructed based on the critical literature review. Hypotheses concerning age and tenure of a CEO coincide with the common practices in the body of related research - the inclusion of such hypotheses (and as an extension the related variables) is necessary in order to be able to draw reliable conclusions. The remaining hypotheses were formulated through the analysis of underlying motives, that influence the decision-making process of a CEO to create new not previously used in the well-known literature variables. To do this we analyzed the psychological, physiological and economical reasonings, provided in the related papers, that drive the decisions of both average individuals and specifically CEOs. We also made sure that these inferences were applicable to the peculiarities of the Russian market by confirming them

through the articles devoted to other emerging markets. Based on this analysis we came up with new promising variables, that we are going to analyze in our work. This way our hypotheses are justified and created in accordance with both the previous researches and the underlying motivations behind the decisions and performance of the CEO.

CHAPTER 2. AN EMPIRICAL STUDY OF THE IMPACT OF CEO TRAITS ON COMPANY PERFORMANCE

The second chapter of this paper is devoted to empirical research. First, the methodology of the research will be presented, then we will talk about data collection and sample formation. We will also briefly discuss the general characteristics of the data and descriptive statistics of variables. Then the results of econometric analysis will be considered, conclusions about the main hypotheses of the study will be made, and managerial application will be given.

2.1. Methodology of the research

In order to understand which approach we will use in our analysis it is worth looking at the research approaches of other authors working on the same topic. First of all, we will just look at what have done different authors and then describe our approach that will be used in our analysis.

Let's start this part of our work with the paper "The impact of CEO characteristics on firm value" (Diks 2016). Here we can find a good approach for gathering the data – the most important element of the analysis - and its processing and preparation for further analysis. Here author used two different sources: information concerning different CEO`s characteristics was gathered from WRDS, and information concerning firm characteristics from DataStream. It also should be mentioned that firms were chosen as S&P500 companies. Below we would like to give the list of variables, which were used by the author. It will be useful since we can rely on this set of variables while we will construct our own pool of data.

For the CEO characteristics:

- age,
- compensation,
- tenure,
- gender

For the firm characteristics:

- Tobin's ratio,
- capital expenditures,
- total liabilities,
- sales growth,
- total assets
- global industry classification standard

- market capitalization
- number of common stocks

Author started his analysis with a simple brief overview of the data from which he got very interesting results about CEO`s characteristics in USA which allowed him to see the general picture. We think that it might be interesting to do the same thing and compare the situation with characteristics of Russian CEOs.

This analysis was based on the number of simple linear regressions which helped to found interrelations and derive conclusions. Author used Tobbin`s Q as a dependent variable in order to answer the question whether it is influenced by CEO traits. Author also used number of control variables in order to prevent incorrect results. Control variables are as follows:

- capital expenditures divided be total assets
- total liabilities divided by total assets
- sales growth
- firm size

In the article «CEO Traits, Corporate Performance, and Financial Leverage» (Chang, Huey, and Lin 2015) authors used random-effect panel-data regression analysis in order to estimate the regression. In order to understand which parameters should be included into regression equation authors used Pearson correlation test. Also, in order to correctly specify the firm size authors used a natural logarithm of total assets. As well, authors used a binary variable which indicates the financial crisis (1 if the year was before 2007 and 0 otherwise) and in order to measure the effect of a crisis authors used cross effects with this variable and cash compensation and also traced the interconnection between cash compensation and a firm size. An interesting finding of this article is that CEO tenure and financial leverage are negatively correlated which indicated that the more years CEO holds his position the less is his desire to take risk and increase leverage of the company. Besides the regression analysis authors used several approaches (ANOVA, t-tests) in order to determine whether the mean values of the variables are different for each industry and results showed that the difference in variables is significant. Findings of a regression model showed that guaranteed fixed cash compensation reduce risk aversion and the CEO is more inclined to increase debt financing. Concerning the CEO traits authors managed to find out that in non-financing firms CEO with higher tenure tend to be more conservative and thus this parameter has a negative correlation with performance indicators. Also, results of their model showed that age of CEO has a positive effect on firm performance. This finding is consistent with our

hypothesis that the age (which reflects the experience of a CEO) has a positive effect on firm performance.

In the article “The 'CEO' Effect on the Performance of Brazilian Companies” Serra, Três, and Ferreira (2016) used quite an interesting approach to measuring education. Authors used a four-digit variable scaled from 0 to 4 where 0 is no university degree at all and other numbers for different degrees of education. For modelling authors used pooled OLS regression techniques. Authors also started their analysis from the correlation matrix which helped to check for multicollinearity and check the degree of relationship of variables. Their research disproved their original hypothesis. In fact, they found out that competence is negatively related to the performance of a company.

Below we present a table of comparisons (see table 2) of other articles that have been mentioned in this work. It will help us to get a quick look on main points of that works and on the basis of all the analyzed material to draw conclusions that will be applied to our work.

Table 2

Table of comparisons by methodology, data collection and variables

Name of the Article	How the data was collected	Research methods	Variables
CEO Selection, Succession, Compensation and Firm Performance (Zajac 1990)	The research was based on the data collected about CEOs from the largest corporations in US in 1987 by Forbes and Fortune magazine and also via questioning the CEOs on the special forum	The research was conducted using ordinary least-squares regression model	Average ROA of the firm as a dependent variable and Selection/succession and compensation factors as explanatory variables
The Role of Chief Executive Officer (Glick 2017)	Data was downloaded from Qualtrics directly into SPSS for statistical analysis, eliminating the potential for human error from data input	Author used a self-reporting survey in order to collect data for testing comparative and associational questions and hypotheses about the role of CEO in the company	Gender, age, average tenure in current place, role categories as explanatory variables
The impact of CEO characteristics on firm value (Diks 2016)	WRDS database for CEO characteristics, DataStream for firm characteristics	Linear regressions and panel data modelling with addition of control variables	Age, compensation, tenure, gender Tobin's (as dependent variable), capital expenditures, total liabilities, sales growth, total assets, Global Industry Classification Standard, Market capitalization, Number of common stocks

Name of the Article	How the data was collected	Research methods	Variables
CEO Traits, Corporate Performance, and Financial Leverage (Chang, Huey, and Lin 2015)	Panel data for 729 US firms was taken from ExecuComp database	Authors conducted Pearson correlation test in order to understand the relationship between variables. Authors used ANOVA for difference analysis and random-effects panel data modeling in order to analyze the interconnections	ROA and ROE were used in order to measure the firm`s and shareholders return. Authors also used CEO compensation, tenure, age, gender, duality and firm`s characteristics

Based on the fact that panel data modelling was used in several studies and brings rather good results we will base our research on the same approach. In order to understand in what form the variables will be included in the model, we will conduct tests for normality and determine the distribution of variables. Also, we will perform Person correlation tests in order to trace the degree of interconnections.

In order to get more correct results and see the whole picture we will construct several models for each of our dependent variables. Right hand side will be the same for all of the models. This would help us to compare different models and see which indicator of performance of a company is interrelated with independent parameters. Also, by dividing our models we will be able to see which characteristics are more important in a short run and which in a long run. Also, the division of models according to market based and accounting based approaches will help to identify which characteristics are important in each case and then firms will know exactly what to look for depending on what goal they are pursuing - short or long run influence.

Now let's look at all variables we are going to have (see table 3):

Table 3

Description of the used variables

Name of the variable	**Description**
Independent variables, CEO characteristics	
GENDER	Indicates the gender of a CEO 1 for male, 0 for female
AGE	Indicates age of a CEO Number of years from the birth date up to each analyzed year
EDUC	Indicates level of education a CEO Categorical variable, which takes the following values: 1– higher education 2 – candidate of sciences, 3 - doctoral degree
M_AGE	Age of a male CEO, number of years from the birth date up to each analyzed year

Name of the variable	Description
SAME_EDUC	Indicates whether CEO got relevant education 1 - if CEO`s education was related to the same industry in which the company operates or if the person received an economic or managerial education, 0 -otherwise
STUDIED_ABROAD	Indicates whether CEO got education abroad 1- if CEO studied abroad, 0 - otherwise
RF_CITIZEN	Indicates citizenship of CEO 1 - if CEO is citizen of RF or USSR, 0 - otherwise
TENURE_HERE	How many years person works at this company
CEO_ TENURE	How many years person works at this company as a CEO
CEO_PREV	Indicates previous managerial experience 1- if CEO was previously a CEO in other companies, 0 - otherwise
CEO_COUNT	How many times person held the position of a CEO (including this company)
CEO_TEN_PREV	Indicates previous managerial experience How many years held CEO position at previous company(-ies)
FROM_COMP	1- if person worked in this company and received promotion to CEO, 0 - if a new person for the company immediately became CEO
SWITCH	Indicates previous working experience In how many organizations person worked before started being CEO in this company
SAME_SPH	Indicates previous working experience 1- if person previously worked in the companies from the same industry as current company, 0 - otherwise
FAMILYPERSON	Indicates marital status of a CEO 1- if CEO has a family (spouse, children), 0 - otherwise
FAMILY_M	Indicates marital status of a male CEO 1- if male CEO has a family (spouse, children), 0 - otherwise

Name of the variable	Description
BD_PRES	1 if CEO is part of board of directors, 0 otherwise
CHAIRMAN	1 – if person is (or has been for the past 3 years) a chairman at this company
Independent variables, control variables	
LN_TOT_ASS	Logarithmic value of total assets
LN_SALES	Logarithmic value of sales
LN_EQUITY	Logarithmic value of equity
C_AGE	Number of years since company foundation up to each analyzed year
LN_PROF_BEFORE_TAX	Earnings before income and tax
LEVERAGE	The ratio of borrowed to own funds
Dependent variables, proxy for company performance	
ROA	Return on assets
ROE	Return on equity
MTB	Market to book value
Tobins` Q	Tobin's Coefficient

In order to conduct an empirical study aimed at establishing the relationship between the characteristics of the CEO and the company's performance, several regression models of the following type were used (see formula 6):

$$Performance_{i,t} = \quad (6)$$
$$= \beta_0 + \beta_1 \text{Control Variables}_{i,t} + \beta_2 \text{CEO characteristics}_{i,t} + \varepsilon_{i,t}$$

We decided not to describe all the models that we will build in the course of regression analysis, so as not to weigh down the text. Instead we presented the logical structure of all models that will be build. The dependent variable in the model (6) – $\text{Performance}_{i,t}$ – stands for financial performance of the company and is measured using accounting and market indicators. "Control $\text{variables}_{i,t}$" stands for the vector which will include all necessary control variables. "CEO

characteristics$_{i,t}$" stands for the vector that will include a set of all possible variables which represent CEO traits.

2.2. Sample creation: data sources and data collection techniques

The sample includes public non-financial companies, as well as companies which were traded on the Moscow exchange and the RTS exchange in 2009-2018. These companies were chosen because they are the only ones that disclose the information needed to conduct the research.

We excluded companies where the role of the sole executive was transferred to the management organization, since in such companies it is impossible to track the role of influence of the personal characteristics of the CEO. Our sample includes 200 companies, for 94 of which there is information on market indicators.

In order to compile a sample of data for companies, we used various sources in this study: SPARK database[2], Thomson Reuters Eikon database[3], Interfax[3], official websites of companies, informational sites containing information about the biography, education, career, and personal life of CEOs. Further we will look at the main sources of information in more detail.

The initial sample of companies was obtained from the Moscow exchange website. When we reached the end of the list of companies uploaded at the first stage, the sample was extended with companies uploaded from SPARK database, since we could not find needed information for all initial companies. Finally, the third stage was to extend the existing list with companies from Thomson Reuters Eikon database, so that we will have sufficient amount of companies with information on market indicators. The process of selecting companies from Thomson Reuters Eikon database will be described below in the text.

2.2.1. SPARK database

The main reason for using SPARK databases in our research was the fact that it is the first most popular data resource for researchers in Russia which provides analyst with almost all necessary information. That`s why, the main accounting data for our analysis was taken from SPARK's databases. From the website menu we chose “Sample” tab and then chose Russians companies.

The interface of the SPARK search page allows to include both quantitative indicators (the main indicators from the company's financial statements) and qualitative indicators - the company's age, stock ticker, full name of the CEO, legal form of the company and much more.

[2] SPARK database. http://www.spark-interfax.ru/
[3] Thomson Reuters Eikon. https://eikon.thomsonreuters.com/index.html

Via the choice of quality indicators we were able to compare companies from various sources (which will be discussed later in the text). The indicator of legal form allowed us to sort all companies from the search and make a sample only for public joint-stock companies, open joint-stock companies and limited liability companies. The sorting was performed in such a way as to leave those companies that are more likely to find data on and those companies that in their combination describe a large part of the Russian market. We take yearly data for the period from 2009 to 2018 for 200 companies.

2.2.2 Thomson Reuters Eikon database

The choice of Thomson Reuters Eikon databases was determined by the need to obtain information on market indicators, which was absent in the SPARK databases. The most difficult part of collecting data in Thomson was selecting a list of companies. In order to make a sample following steps were performed:

1. First, we filtered all available companies by "Market" meaning that we included only Russian companies in the list – so we get 2282 results
2. Then we applied "Activity" filter and chose only active companies. This was done to ensure that we can get all necessary information for each time period and the data will be balanced
3. Finally, we apply filter "Exchange" so as to get data on the companies which are traded at MICEX – RTS and Russian Trading System

Start date we specified 11 years from now so as we can get data from 2009 year. We take yearly frequency in order to get data for each year.

2.2.3. Informational resources for getting information about the CEO

One of the hardest parts of the data collecting process in our research was the gathering of the information about the sociodemographic characteristics of real people – characteristics of the CEOs - since all the information was gathered manually. But, even though this process was really hard, at the same time it serves as a competitive advantage of this work.

The initial source of information was Interfax[4] website. In order to find information for each specific year for each company in the sample the following steps were necessary:

1. The company name was entered in the search bar and the desired company was found from the list of results. At the same stage we obtained information about the industry to which the company belongs

[4] Corporate information disclosure center. https://www.e-disclosure.ru/poisk-po-kompaniyam .

2. After choosing a specific company we get to the companies` card where we can find out basic information about this company: the name of the current CEO, the full name of the company, the date of state registration. At this stage, we checked whether the company was selected correctly - we compared the name of the CEO specified in the company card with the name specified in the upload from SPARK database. Also we compared the age of the company with the specified date of state registration indicated in the company card. For a more thorough check, we went to the official website of the company and checked the same data there. If everything matched, the selected company was correct and we could move on to the next step – data collection

3. In the card menu, we went to the section "Reporting", then to the section "Quarterly information" where we could find all quarterly reports published by the company. We downloaded quarterly reports for each year and in the section "5.2.2. Information about the sole Executive body of the Issuer" in each report we found all the information we were interested in, if it was specified. We also checked the section "5.2.1. Composition of the Issuer's Board of Directors (Supervisory Board) " in order to find information about whether the CEO was a part of Board of Director and whether he was a Chairman.

We also studied various public sources in order to get a more complete picture about characteristics for each CEO (this also had to be done because there were often mistakes in quarterly reports, and to check the correctness of the information data was gathered from various sources, compared and verified).

The gathering of the required data was complex and non-traditional. For example, the information about the marital status of the CEO was not always available. To find it out we would first check the information in public sources. If the information was not found yet we would search the latest publications of the CEO, which often included photos with his/her spouse and/or children. But we will only consider these publications as a proof of the family position if the appropriate description was included (e.g. "spending time with my family"). As the last resort (which was more common that we would like it to be) we checked the photos of the CEO on the matter of the ring on his/her finger as the sign of whether the CEO was married or not. Such complex techniques of gathering the data are what makes our research special, especially in the context of the lack of needed information in our country. Another way to get information on CEO`s characteristics would be to interview CEOs. But despite the obvious advantages of using surveys in order to get information (Gaskell, Wright, and O'Muircheartaigh 1993) we did not consider interviewing as a way to get information in our particular case because according to researches

this method is quite complex and has its drawbacks (Nurmi et al. 2008; Scherpenzeel and Willem 1997) especially because due to human nature people tend to give incorrect information in surveys and this inaccuracy can lead to some systematic errors and spoil the quality of data (Brenner and DeLamater 2016; Kanazawa 2005).

Here we should mention that we are not saying that this approach is the best way to gathering data. But since there was no research on how to get information on such CEO characteristics and due to the inability to interview each CEO in our particular case we decided to introduce such a method of obtaining information and, based on how good this method will work – whether it will be possible to find information of various characteristics - we can advise companies to slightly expand the information published in the quarterly reports, so that the future researchers will be able to improve steps of our research.

So, due to all mentioned above steps this process took the majority of the data gathering process.

Further, we are going to discuss results of the first step of our analysis.

2.3. Descriptive statistics

We will start our initial data analysis by analyzing the industry sample structure. Naming of the industry sectors was done in accordance to the Interfax[4] specifications. We decided to include in our sample companies from different industries because we found similar approach in the works on the same topic (Chang, Huey, and Lin 2015; Diks 2016; Han 2014) and because due to this approach our results can be applicable to the average Russian company, not just the one from the specific industry with specific characteristics.

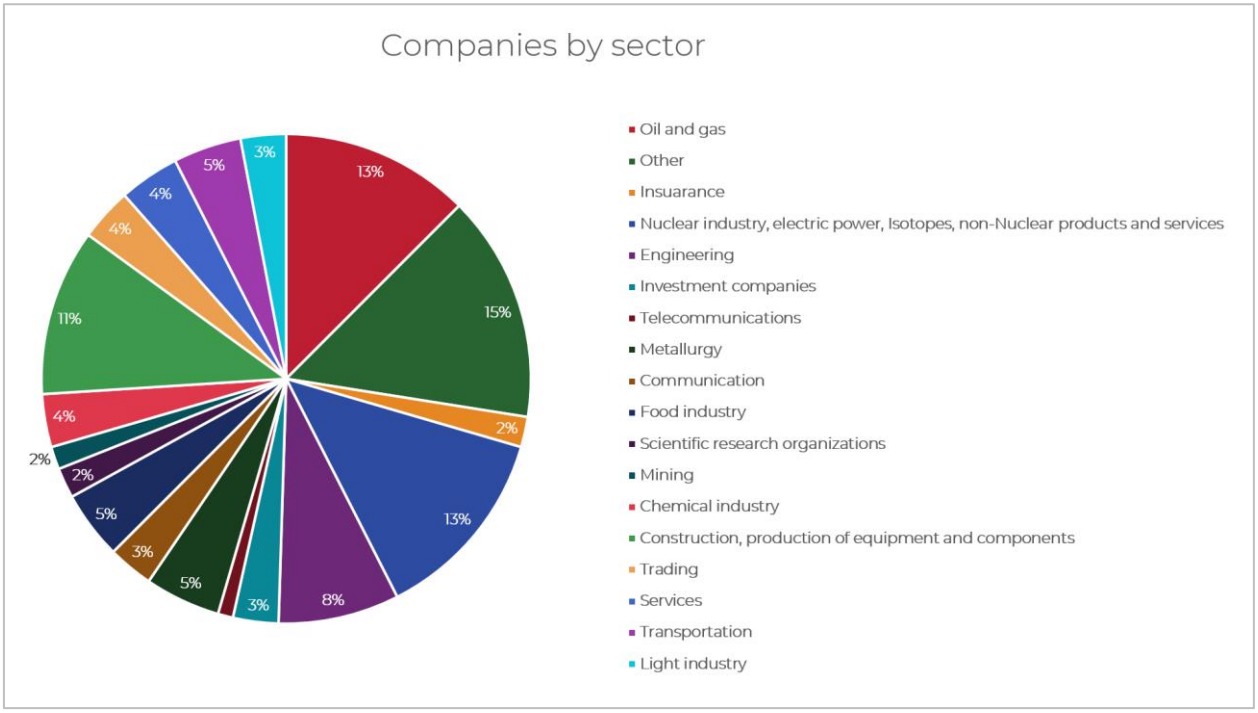
Industry distribution

Table 4

Name of the sector	Attributed index	Number of companies
Oil and gas	1	25
Other	2	30
Insurance	3	4
Nuclear industry, electric power, Isotopes, non-Nuclear products and services	4	26
Engineering	5	16

Name of the sector	Attributed index	Number of companies
Investment companies	6	6
Telecommunications	7	2
Metallurgy	8	10
Communication	9	6
Food industry	10	9
Scientific research organizations	11	4
Mining	12	3
Chemical industry	13	7
Construction, production of equipment and components	14	22
Trading	15	7
Services	16	8
Transportation	17	9
Light industry	18	6
Total		200

In the table 4 we can find the number of companies which belong to each industry. For a more convenient representation of information consider the picture 1 below:



Pic. 1 Companies by sector

As we can see from the pie chart proportion of the most popular in the sample industries is almost evenly represented. A significant share is held by companies from Oil and Gas industry (13%) nuclear, electric power, isotopes, non-nuclear products and services industries (13%), construction, production of equipment and components industry (11%) and others. This way we can state that there was no significant influence of one particular industry that impacted the results we got.

Next let`s look at descriptive statistics of variables which are presented in the table 5 below.

Table 5

Descriptive statistics of variables

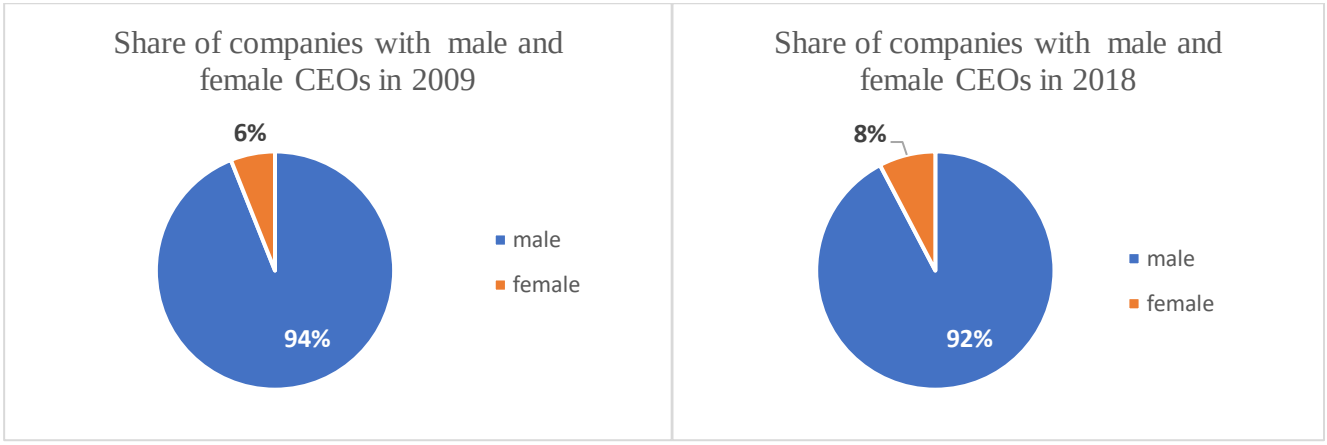
Variable	Number of observations	Mean	Minimum value	Maximum value
AGE	1930	49.890	23	87
TENURE_HERE	1930	7.865	0	43
CEO_COUNT	1930	1.677	0	7
CEO_TEN_PREV	1930	2.023	0	25
SWITCH	1930	3.172	1	19
C_AGE	1930	21.904	1	128

From the summary table we can see some descriptive statistics of the variables. We will discuss only the most interesting of them. So, for example the average age of CEO in the sample was 49 years. The youngest CEOs were-Oleg Gennadievich Tsypyshev, who headed the Abakan experimental mechanical plant in 2010 at the age of 24 and Vitaly Kirilyuk, who headed PJSC Gagarinskremtechpred in 2009 at the age of 23. The oldest CEO in our sample was 87 years old - Ginin Stepan Petrovich headed by PJSC Gus-Agro. The longest period a person has worked for a company is 43 years. Also, the largest number of companies where the CEO worked before entering the position of CEO in this company is 19.

We also decided to make a word cloud of CEO names in 2018 year (see picture 2) in order to find some interesting results and make reader of this work a little bit entertained with something not that serious.

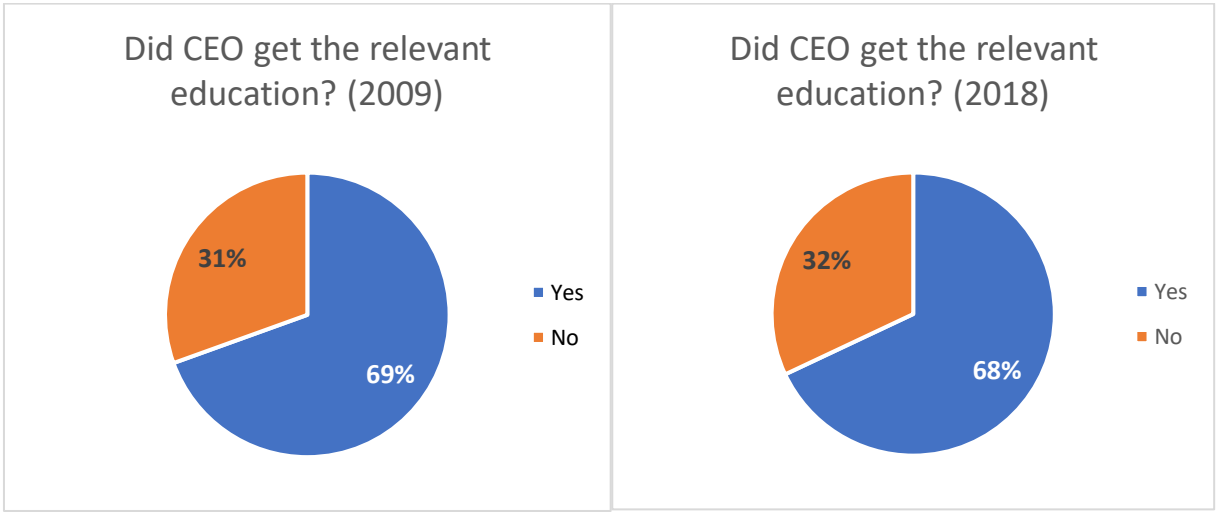
Pic. 2 Word cloud of male and female CEO names in 2018

So, the most popular male names among CEOs are Sergey, Vladimir and Alexander. And the most popular female names are Olga, Elena, Irina, and Natalia.



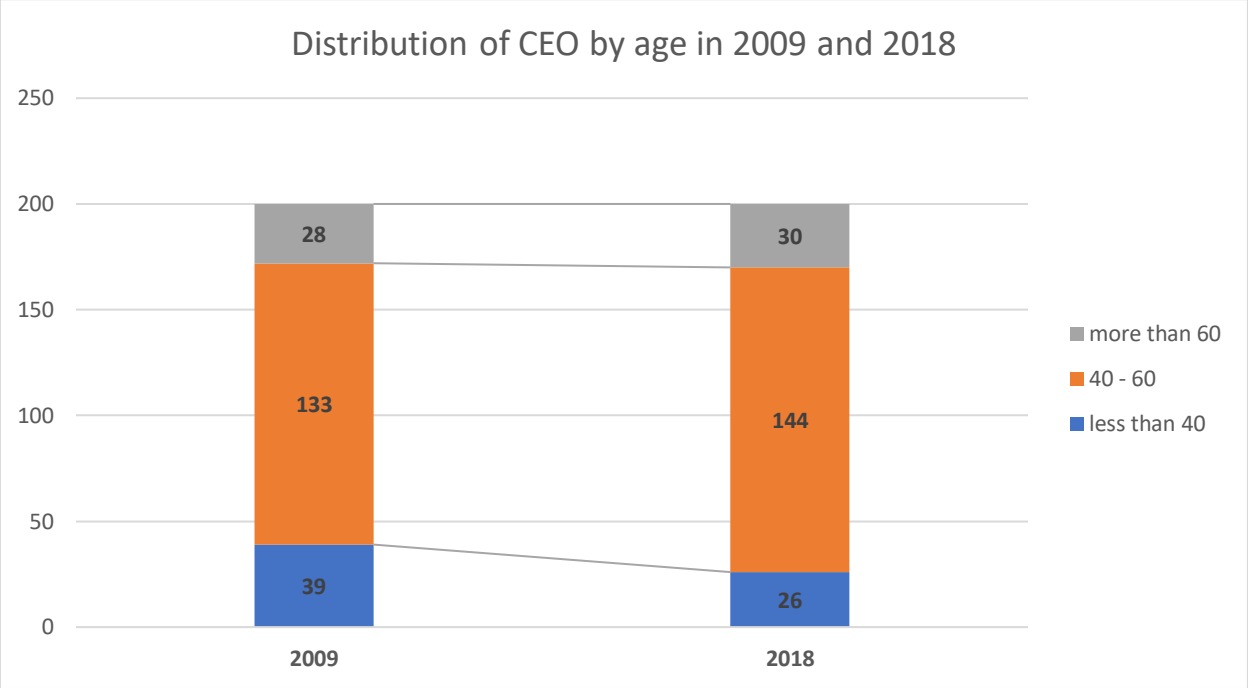
Pic. 3 Share of companies with male and female CEOs in 2009 and 2018

From the graph (see picture 3) we can see that with the time the percentage of women holding the position of CEO in Russia has increased from 6% to 8%. The proportion of women to men in the position of CEO in Russia for 2018 generally coincides with the distribution for the US market. Thus, according to information sources, women make up 5% of Fortune 500 CEOs and 4.8% of CEOs in S&P 500 companies (Warner, Ellmann, and Boesch 2018).



Pic. 4 Share of CEOs with relevant education in 2009 and 2018

From the picture 4 we can see that one third of the CEOs have relevant education. At this stage we can say that this is rather good results since we believe that presence of relevant education indicates greater level of competence of a CEO.



Pic. 5 Distribution of CEO by age in 2009 and 2018

From the picture 5 we can see that in 2018 the percentage of young CEOs is lower by 33% and the middle age category increased by 8%. This may be due to the fact that younger CEOs from 2009 have matured and moved to the next age category in 2018. The fact that most of the CEOs got into the middle category – aged from 40 years to 60 years coincides with the findings from work on the US CEOs whose average age is 58-59 years (Korn Ferry 2017; WorldatWork 2020).

2.4. Regression analysis and discussions

As a dependent variable that characterizes the company's performance we used four indicators which reflect both operating and market performance: return on assets, return on equity, Tobin`s Q and Market-to-book value. To select the model in each case, we conducted the Hausman test, which allowed us to decide which type of model is best suited. According to Pearson correlation test we were able to establish that there is a relationship between the dependent and independent variables. All variables are winsorized at the 1st and 99th percent levels.

At the first stage, a number of models were built with control variables as dependent variable. This allowed us to identify which control variables are most significant and it makes sense to include them in the model. Next, we added the CEO characteristics (both individual variables and interrelationships) and in the course of several iterations, the most suitable models for the tasks were selected.

Results of regression analysis using as a dependent variable both market -based and accounting-based indicators are presented in the tables 6 and 7 below:

Table 6

The results of the regression analysis for the models with market-based indicators

	Tobin`s q			MtB		
	(1)	(2)	(3)	(4)	(5)	(6)
C_AGE	-7.01e-07	-	-	-	-.0078	-
GENDER_MALE	.0000586	.0000825	.0000628	-	-	-
RF_CITIZEN	.0000965	-	-	-	-	-
EDUC	-.0000941***	-.0000961***	-.0000916***	-.3782	-.3743	-.4299
SAME_EDUC	-.0000644	-.0000635	-.0000625	-.9537*	-.9733*	-.9088*
STUDIED_ABROAD	.0000865	.0000853	.0000686	-	-	-
AGE	-7.47e-06***	-7.51e-06***	-6.89e-06**	-.0113	-.013	-.0074
CEO_PREV	.0000966**	-	.0001143**	-	-	.5355
CEO_TENURE	6.46e-06	8.24e-06#	4.71e-06	.0639	.0503	.0591
TENURE_HERE	9.35e-06***	7.86e-06**	8.60e-06***	.0057	.0139	.00394
SAME_SPH	-.0001325**	-.0001285**	-.0001388***	-.738#	-.6946	-.8207#
BD_PRES	-.0000739*	-.000071#	-	-.7166*	-.7142#	-.734*
FAMILYPERSON	.0001881**	.0001919***	.000177**	.3730	.3832	.5188
CEO_TEN_PREV	-	-	-5.68e-06	-	-	-
CHAIRMAN	-	-	-.000173#	-	-	-
SWITCH	-	-	-	.3221***	.326***	.3628***
FROM_COMP	-	-	-	-	-.2368	-
CEO_COUNT	-	-	-	-	-	-.3373
LEVERAGE	-6.05e-06*	-6.01e-06*	-5.92e-06*	.092***	.09121***	.0909***
LN_PROF_BEFORE_TAX	5.15e-06***	4.94e-06**	5.16e-06***	.0364**	.0363**	.0373**
MTB	-9.60e-06**	-9.17e-06**	-9.50e-06**	-	-	-
TOBIN`S Q	-	-	-	-976.7761***	-978.431***	-972.1601***
CONS	.0006566*	.000768***	.0006854***	1.8272	2.1182	1.8167
N	900	900	900	900	900	900
R^2	.2332	.2091	.2636	.0526	.0529	.0546
P-VAL	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000

***,**,*, # indicate significance on 1%-, 5%-, 10%-, 15%-level of significance, respectively

Table 7

The results of the regression analysis for the models with accounting-based indicators

	ROA			ROE	
	(1)	(2)	(3)	(1)	(2)
C_AGE	-.0000541	-	-	-	-
GENDER_MALE	.8645#	.861#	.8601568#	.1971#	.1486992
BD_PRES	.0012	-	-	-	-
EDUC	-.0136*	-.0138*	-.0136302*	-	-
SAME_EDUC	.0153#	.0152#	.0152727#	.1107*	.1089544*
STUDIED_ABROAD	.0129	.0139	.0133273	-	-
CEO_TEN_PREV	-.0035343***	-.0035288***	-.0035077***	-.001	-.0031
CEO_TENURE	.0007949	.0008268	.0008242	.0073	.0043
TENURE_HERE	.0013417*	.0013282*	.0013303*	.00535**	.0074
RF_CITIZEN	-.007404	-	-.0064985	-.3873*	-.3711*
SAME_SPH	-.0141	-.0141	-.0142146	-.0139	-.0043
SWITCH	.002	.0019	.0019485	-	.0098
AGE	.0338	.03369	.03366	.0002273#	.0002486#
AGE^2	-.0003641	-.0003632	-.0003628	-.0225189	-.0243115#
M_AGE	-.0382#	-.03814#	-.0380845#	-	-
M_AGE^2	.0004028#	.0004018#	.0004013#	-	-
FAMILY_M	-	.000807	-	-	-.0430452
FAMILYPERSON	-	-	-	-.0052532	-
CHAIRMAN	-	-	-	-.1201336	-
FROM_COMP	-	-	-	-	-.0482
LN_SALES	.0031415***	.0031467***	.0031472***	.0057928	.0065577
LN_EQUITY	.0077133***	.0077122***	.0077096***	-.0235478***	-.0234036***
LEVERAGE	-.0023322***	-.0023296***	-.003309***	-.0161672***	-.0159872***
CONS	-.9226#	-.9272#	-.9196#	1.7938***	1.7917***
N	1930	1930	1930	1930	1930
R^2	.3125	.3139	.3136	.0469	.0470
P-VAL	0.0000	0.0000	0.0000	0.0000	0.0000

*** ,**,*, # indicate significance on 1%-, 5%-, 10%-, 15%-level of significance, respectively

All constructed models that used control variables and various variables describing different CEO`s traits were statistically significant.

We can see from the table 6 that coefficients of the age variables are statistically significant on the 1% and 5% levels and has a negative sign. From this we can conclude that our first hypothesis about the age of the CEO is confirmed and we can say about negative interrelationship between age of a CEO and companies' performance. At the same time, comparing results from models on market indicators and models on accounting indicators we can see that the impact of age is more crucial for market indicators and not for accounting ones. This means that market lays more significance into the age of a CEO than this influence impacts the operations of the company (most coefficients for the age variables in models with accounting indicators as dependent variables are not statistically significant at the conventional levels and thus we can say that interrelationship between age and company's performance is not so strong but still evident. Our findings for the Russian market concerning the interrelationship between age and company performance coincide with the results of other similar studies conducted for the developed markets (Diks 2016; Zhang 2010; Bertrand and Schoar 2003). Here we need to mention that in one model with accounting indicators we see that variable age is significant on the 15% level and the effect of coefficient of only age variable is positive and this fact can indicate the assumption described in the theoretical part that the CEO becomes more experienced with age (Diks 2016) and this has a positive input for the company. Nevertheless, this positive effect is outweighed through the inclusion of age^2 which makes the overall impact negative.

In our research we also tried to capture nonlinear relations between age and performance and included age^2 into the models. This helped us to trace or at least account for the situation where with the additional years in age person doesn't get more experienced but rather loses energy and brain activity due to the aging process (How the Aging Brain Affects Thinking; Peters 2006) or due to the fact that person is overflowed with already accumulated information. Thus, aging affects the decision-making process of the CEO and has a negative interconnection with company performance.

We also decided to check how important age is for a male CEO and included variable M_AGE (see table 7) , and although coefficients are not statistically significant on conventional level we can still talk about its significance on the 15% level and we think this parameter should be mentioned. The overall effect of the coefficient is negative so we can say about negative interrelationship between age of a male CEO and company performance.

H1: Age of a CEO is negatively associated with company performance - confirmed both for models on market-based and accounting-based indicators.

This way we can see that on average the Russian firms with the older CEO are performing worse. This fact can be the sign for the stakeholders, particularly the investors, which will help them to better assess the managerial structure and power within the firms and thus the rationality and the effectiveness of their investments. At the same time there are strong evidences from both biology and psychology that support the claim that after a certain threshold the person becomes too old to be an efficient leader. Thus, specifically for this hypothesis, we can also state that Russian firms may want to switch the current CEO, that is too old for a younger one.

The hypothesis about the relationship with education of a CEO was not confirmed for data on Russian companies and thus we can say that additional educational level has negative interrelationship with company performance. The coefficient for variable education is significant at 1% level of significance and has a negative sign (see table 6). So, we can conclude that companies do not need CEOs with a doctor of science or candidate of science degree, and that basic higher professional education is sufficient to consider if the CEO competent for the position he or she holds.

It could be connected to fact that CEO becomes overeducated and so immersed into educational background and stick to it that this can lead to problems when dealing with real situations. It is often the case when the academic cases are not so related to the real-life business problems. And the CEOs may construct wrong implications, results and conclusions from the models that do not fit the firm that they are in. There is an opinion that overeducation can be as harmful as undereducation and sometimes it is enough to have the "required" level of education (Joubert 2014). We believe that the level of competence, which is measured by education as we discussed in the theoretical part of this work is sufficiently formed in the process of obtaining higher professional education and is adequate for the position held. Here we can say that it may be the case when person with doctor of science or candidate of science degree can hold the position of adviser to the CEO so highly educated people will be present in the company and their opinion will be taken into account but the disadvantages of overeducation will not greatly affect its functioning.

Maybe we have this result due to the specifics of Russian education - when one gets doctor of science or candidate of science degree education goes very much into scientific field and far away from business and real-life cases. This could be not the case for the universities in other countries, for example in United States, as they could pay more attention to more business-oriented approaches.

H2: Additional educational level (candidate and doctoral) is positively associated with performance of a company- not confirmed both for models on market-based and accounting-based indicators.

This hypothesis does not only serve as a sign for market players, but also provides a recommendation for the future candidates for CEO positions. They can see that on average the firms with overeducated CEOs do not perform better and hence if the person wants his or her company to have higher chances of being successful there is no need of obtaining higher educational Russian degrees. But, it is a different question of how this characteristic is viewed and rewarded by the company`s employers – a future CEO candidate may be rewarded more or it may be more easily for him or her to actually get a position if he or she is more educated, even though as we can see from our analysis these facts are not tied to higher performance. This question can be addressed in the future research which will require a different approach and methodology.

Hypothesis about the relationship between performance of the company and CEO`s relevant education was not confirmed for the models with market indicators. As we can see from the table (see table 6) coefficients of variables are significant at 10% level and have a negative sign. This may be explained by the fact that in our sample there is a large part of heavy industry companies and universities where a person can get a relevant education are not very well known and prestigious among investors and market players. And perhaps that is why we observe a negative interrelationship between relevant education of a CEO and company performance.

Concerning the models with accounting-based indicators we see that coefficient is significant at 10% level and has a positive sign (see table 7) which bring us to the conclusion that there is a positive interrelationship between CEO`s relevant education and performance of the company represented by accounting indicators. These results for Russian market coincide with the ideas formulated for the developed markets and discussed in the theoretical part of this work and could be explained by to the fact that for the operations of the company it is important that CEO knows the specifics of industry and knows how to manage the company. In other words, this knowledge will help CEO in understanding the time constraints of the company's projects as well as risks and opportunities that come from them.

H3: CEO with relevant education is positively associated with company performance - not confirmed for models on market-based indicators, confirmed for models on accounting-based indicators.

These findings show that there are misalignments between the performance of the company based on accounting indicators and performance, based on market ones. Our analysis hints, that the market players should not downgrade the competence of CEOs who graduated from not so well-known and prestigious universities, as the presence of relevant education is proven to coincide with the higher performance levels when considering the accounting based performance. At the same time,

the applications for the future CEO are somewhat limited in this regard – even though the accounting performance of the company is likely to be higher with the CEO, that has the relevant education, this trait is not valued by the market and so we cannot make clear conclusions that it is useful to be a graduate of fitting universities in a modern Russian market.

The hypothesis about interrelationship between previous managerial experience and company performance was confirmed – coefficient of variable CEO_PREV is statistically significant at 5% level and has a positive sign (see table 6). These results for Russian market coincide with the ideas formulated for the developed markets and discussed in the theoretical part of this work and we can assume that market sees that CEO had accumulated managerial experience on the previous work places and now he or she is an experienced person who is not the first time managing the company, which probably can mean that company will be successful under his leadership. And most likely is that the market will not care what specific approach this CEO uses when managing the company or what else is influencing his decision-making process.

Moving on to the models on accounting-based indicators we see that previously accumulated experience is negatively interrelated with company performance. Here we look at the variable CEO_TEN_PREV which is statistically significant at 1% level and has a negative sign (see table 7). This results may be caused by the fact that previous managerial experience makes a person conservative and highly dependent on this experience, unwilling to change his or her managerial style, that helped this CEO and worked its best before but maybe not helpful in this company taking into account modern and everchanging business environment. The contingency theory supports this claim by underlining that there is no one best-fitted unified way to run the business, as the situation in each company is different and the market environment always changes (Mohr, Sengupta, and Slater 2010). The desire of a CEO to repeat and imitate his previous actions, that he or she sees as a success, is thus unreasonable – there is no guarantee that these actions will still lead to a success for a new firm in a new time period and that may lead to the worse performance.

H4: If current CEO was previously a CEO in other company(-ies) it will have positive interrelationship with the company performance- confirmed for models on market-based indicators, not confirmed for models on accounting-based indicators.

The results that came from the analysis of the 4th hypothesis are similar to the previous ones – they suggest different direction of influence for accounting and market indicators. By this we mean, that accounting performance of the company is on average lower with the CEO, that had managerial experience in other companies, but the performance, that takes into account the market reaction, is on average higher. This discrepancy of the results can be the basis for future research, in which it will

be possible to track exactly the personal attitude of market players and employers of the company to the fact that the candidate has previous experience in managerial positions.

The hypothesis that tenure of a person has positive interrelationship with company performance was confirmed both for the models with accounting-based indicators and with market-based once. We see that coefficient of the variable TENURE_HERE statistically significant on the conventional levels and has a positive sign (see table 6 and table 7). Our results for Russian market coincide with findings on similar researches conducted for the developed market (Diks 2016). Here we would like to note the fact that this positive direction means that market also positively evaluates a long stay of a CEO in the same company and does not see that the CEO has been "too long" in the company and its time to have a fresh mind.

H5: Tenure of a CEO has positive interrelationship with company performance- confirmed both for models on market-based and accounting-based indicators.

Both types of performance metrics show that the firms with a CEO, that worked for a long time within this company, perform better on average. This fact can be a proof for different stakeholders, that it is not a bad sign, if the Russian company is managed by a person that was working in the firm for some period of time. And this result can be helpful for stakeholders decision-making process. At the same time, the fact that both the accounting performance and, specifically, the market one are likely to be positive, shows that when choosing between the majorly similar candidates, it could be better to choose the one, that previously worked in the company to sustain a good level of performance.

Hypothesis that marital status of a CEO has positive interrelationship with the company performance was also confirmed for the models with market-based indicators (see table 6). Variable FAMILYPERSON is statistically significant at 1% and 5% levels and has a positive sign. This result is quite logical – market positively assesses image of CEO with family. And it also coincides with theoretical implications that he or she will take less risks, will be more tolerant and will have more mature values (Connley 2019; Loria 2018; Roussanov and Savor 2014).

H6: If CEO is married, it will have positive interrelationship with the company performance - confirmed for models on market-based indicators, not confirmed for models on accounting-based indicators because the coefficient of the variable was insignificant.

As the results for the accounting performance are not significant, we can build our conclusions taking into account only the market metrics. For the company point of view there should be no doubts in having the CEO with a family as it on average is positively viewed by the Russian market. These

results can also be extrapolated for the CEOs themselves – they should not be afraid to have a family, as it has no negative interrelationship with accounting performance of the company and is likely to be viewed positively by the market. At the same time, we should note, that our results do not show (neither prove, nor disprove), that if a CEO is not married it should immediately pursue building a family in order to have a positive impact for the company. Analyzing this question requires a deployment of different methodology – specifically event studies techniques. Even though there will be some difficulties in this analysis (for example, in properly selecting the event windows, where only the marriage of a CEO happens, without other influential events; and in data gathering process, as it could be troublesome to properly identify accurate dates of the news of a CEO marriage), it could be an interesting specialized direction for a further research in this sphere.

Also, we would like to discuss other variables on which we did not built hypotheses, but which were statistically significant in our models.

For example, for the models with market-based indicators we see that presence of a CEO in Board of Directors has negative interrelationship with company performance. Coefficient BD_PRES is statistically significant at conventional levels and has a negative sign (see table 6). This may be caused by the fact that sometimes the interests of the company and the interests of the Board of Directors may not coincide and it is good when there is a person acting as an intermediary who can compare conflicting interests and make the right decision satisfying mutual needs. And a good way to manage your company is to have a CEO only as an employee of the company (Council on Foundations 2010).

Also we see that in the model with market-based indicators coefficient of the variable SWITCH is statistically significant at the 1% level and has a positive sign (see table 6) which lead us to conclude that increasing number of places where a CEO worked previously has positive interrelationship with company performance. These results for Russian market coincide with the ideas formulated for the developed markets and discussed in the theoretical part of this work. We can say that this result is similar to the results with previous managerial experience and market sees that if a person had previously worked in different places this means that he or she had accumulated experience working in different corporate environments and under different circumstances makes a person more flexible and broadens his outlook.

We should also note the negative sign associated with the fact of CEO having a previous experience in the sphere, that the analyzed company belongs to. This only concerns the metrics of market performance, as the coefficient is not significant for the accounting performance. We can assume that the market sees the previous experience of the CEO in the sphere as a sign of his previous

management errors (which happen to everyone) will be transferred to this company. And perhaps, given the volatility and everchanging nature of the business environment and various cyclical fluctuations in the economy at the moment, it is more logical for the company to have a "fresh look", rather than a person with previous experience in this field. This, however, does not show, that the market undervalues the experience of the CEO, as partially this effect was captured in the coefficients related to the years of the CEO experience.

Thus, in the second chapter of this work we have analyzed approaches of different authors and have decided what methodology we will use in our research and based on the collected data we tested the formulated hypotheses.

Overall, since not all the hypotheses were confirmed we can state that our results for Russian market do not fully coincide with the ideas obtained for the developed markets. For example, the CEO educational degree is negatively associated with the Russian firms' performance, while being positively associated with the performance of companies in developed countries. This could be related to the differences in the educational institutes, where in Russian case the educational process is less concentrated on the business applicability and more on the research activities. But still for the age and tenure the results we obtained for Russian market coincide with the findings for developed markets. This way we can state that there are no major critical differences in the importance of personal traits of CEO between the Russian case and the case of other, more developed countries.

CONCLUSION

The goal of our work was to analyze what interrelationship do CEO traits have with the performance of Russian companies. These characteristics were chosen and defined through the extensive literature review, specifically concentrating on the motives and psychologies behind them to make sure that the constructed hypotheses were justified. As a result, we managed to provide a list of CEO traits, that consisted not only from a singular ones, but also from their interconnections. The chosen characteristics were not just the same as the ones used by other researchers – we made sure to cover the existing research gap by providing parameters, that were not assessed before and that do have an interrelationship with Russian companies performance. These research gap problems are especially true for the Russian market – the body of research that analyzes CEO traits of Russian firms is quite limited and the literature in it mostly concentrates on the standard well-established metrics. As a dependent variable we chose to include different metrics of performance – both accounting-based and the market-based ones. This was done to better capture the effects of the CEO traits, as it is likely, that some of them will influence only specific aspects of firm's performance. The comparison of the influences of CEO characteristics between the aforementioned two types of company's performance provided us with deeper insights, showing which traits of a CEO are important for each particular goal of the company.

The major value of our research comes from the gathered data. The data necessary for such an analysis requires a manual gathering and this process took the majority of the time we spent on this research. The data concerning the CEO traits was collected through the variety of sources and we also made sure to check the possible inconsistencies between them. These resources included Interfax, various informational web resources and official websites of the companies. As the data we were working with was extensive – 200 companies for a period of 10 years – the data collection process took us a lot of time, but in the end provided us with the dataset that is valuable and not available for the easy use to others. The financials of the Russian firms were also not directly available from just the one data source, as our data was concentrated on both the accounting-based and market-based performance metrics. This led us to use primarily Spark and Thomson Reuters Databases, but to cover for discrepancies we also needed to analyze the data from Interfax and from the official websites of the companies.

Below we constructed the table (see table 8) to better present the results for the formulated hypotheses:

Table 8

Results of hypothesis

Hypothesis	Models on market-based indicators	Models on accounting-based indicators
H1: Age of a CEO is negatively associated with company performance	Confirmed	Confirmed
H2: Additional educational level (candidate and doctoral) is positively associated with performance of a company	Not confirmed	Not confirmed
H3: CEO with relevant education is positively associated with company performance	Not confirmed	Confirmed
H4: If current CEO was previously a CEO in other company(-ies) it will have positive interrelationship with the company performance	Confirmed	Not confirmed
H5: Tenure of a CEO has positive interrelationship with company performance	Confirmed	Confirmed
H6: If CEO is married, it will have positive interrelationship with the company performance	Confirmed	Not confirmed (because coefficient of the variable was insignificant)

The results show that age of a CEO on average is negatively associated with all analyzed performance metrics of the company. In addition to that the coefficients related to the age of a male CEO and to the non-linear effects of age also had a negative sign – meaning that the aging of a male CEO coincides even more with a worse performance and that there exists a threshold where the experience effect associated with the age is no longer more important in comparison with the downside of the physical aging. Additional educational levels of a CEO were also negatively interconnected with both types of performance. We believe that this result is dependent on the specifics of a Russian education and the direction of this effect may be different when analyzing other markets. The effect of the relevant education of a CEO was not that straightforward – on average it is positively associated with accounting-based performance, but has a negative interrelationship with the market-based one. The same notion is also true for the effect of a previous CEO experience – the sign for the coefficient in regard to accounting-based performance is negative, while it is positive for the market-based performance. These discrepancies confirm reasonableness of our decision to analyze both types of firm performance as in the opposite case we would see only one direction of interrelationship, ignoring the full picture. The findings connected to the hypotheses 3 and 4 show the implications of the different goals, that the company sets about its performance. For the time, that the current CEO spent working in the company he or she is in, the effects coincide – for both types of performance the higher number of years CEO worked in the company is on average interconnected with the higher performance. That aligns with the judgements that the person that knows ins and outs of the particular company has more probability of leading it to higher performance levels. Lastly, the marital status of a CEO is on average connected with the higher market-based performance levels, while not being significant for the accounting-based ones. This finding indicated that the family position of a CEO is mostly influential for the market players, that see the psychological effects of this trait, while not directly impacting the operations of the company. In the main body of our research we go into more details concerning the reasons, peculiarities and importance of the aforementioned results as well as describing other interesting CEO traits that were not directly incorporated into the main hypotheses.

The majority of the researches concerning this topic is dedicated to the developed markets and our work covers this research gap for the Russian market. The decision to analyze an emerging market came at a cost of data gathering time, but in the end, it provided us with interesting and valuable results, that are not covered in the freely available Russian literature. We also widened the selection of CEO characteristics used by other authors by introducing both the new metrics and the combination of previously established ones.

Our results are aimed at providing more insights to various stakeholders. For example, the investors can use our findings in their analysis of managerial structure to improve the decision-making process of their investments. The findings of our research are also useful for the company level – they serve as a guidance in decision concerning the CEO changes. This is applicable both for the analysis of whether to change the current CEO and how to choose the new one. We should note, though, that our results do not provide a one hundred percent proof, that choosing a CEO with right traits will lead to a higher performance – we only show that the companies with CEOs who had such characteristics perform better on average. But, the market-based performance levels could serve as a guidance of how the market will see the future CEO candidate and hence will help the company in this decision.

The findings we provide can also be used by the future CEOs – for example they can see that the decision to obtain higher levels of education is on average interconnected with lower performance and hence they might want to abandon this idea. But at the same time this does not take into account the fact, that maybe the CEO is not aiming at having a more probability of high performance of the company, maybe all he or she is concerned with is their level of compensation. This leads us to suggest a next direction of research, that concentrates on how the employers of the CEO currently view the analyzed traits. In the light of previous example – even though on average the companies with the overeducated CEO perform worse, the employers may see the doctoral degree of the candidate as an advantage and choose him or her over the other ones or provide this CEO higher monetary compensations. It will be interesting to compare the finding of the suggested research with the ones that we provide to see another dimension of this problem, the dimension that will be more suited to give advices for the future CEOs in Russia. This new research direction will require different methodology and that is the problem with it – it is probable that there will be a severe lack of data related to the Russian market to make strong conclusions. Another interesting idea for the further research lies within the immediate effects of changes in the CEO traits. Our work is not aimed at capturing these effects and it could be helpful to analyze whether the immediate short-term effects even exits for the Russian case. For example, does the news of the CEO's marriage influence the performance, specifically the market-based one, of the company? This will most probably require the use of event-studies techniques, but in this case they will be associated with some difficulties – mainly in capturing the event window where there was no other coexisting incidents happening and in gathering the data of when the information of the marriage became public. These directions of research could be an interesting addition, that further adds to our results and makes a good use of the value of data that we have collected.

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APPENDIX

Appendix 1 Descriptive statistics of variables

Variable	Obs	Mean	Std. Dev.	Min	Max
age	1,930	49.88964	9.897387	23	87
tenure_here	1,930	7.865285	6.934148	0	43
ceo_count	1,930	1.677202	1.01872	0	7
ceo_ten_prev	1,930	2.022798	3.334862	0	25
switch	1,930	3.172021	2.062387	1	19
c_age	1,930	21.90415	17.56315	1	128

Appendix 2 Results of regression analysis with Tobin`s Q as a dependent variable (1)

```
Random-effects GLS regression                   Number of obs     =       900
Group variable: ID                              Number of groups  =        90

R-sq:                                           Obs per group:
     within  = 0.0388                                         min =        10
     between = 0.2332                                         avg =      10.0
     overall = 0.1323                                         max =        10

                                                Wald chi2(16)     =     54.56
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =    0.0000
theta          = .64016427
```

TobbinsQ_w	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
leverage_w	-6.05e-06	3.23e-06	-1.87	0.061	-.0000124	2.83e-07
ln_prof_before_tax_w	5.15e-06	1.95e-06	2.64	0.008	1.33e-06	8.97e-06
MtB_w	-9.60e-06	3.91e-06	-2.46	0.014	-.0000173	-1.94e-06
c_age	-7.01e-07	1.84e-06	-0.38	0.703	-4.31e-06	2.90e-06
gender_male	.0000586	.000155	0.38	0.706	-.0002453	.0003624
rf_citizen	.0000965	.0002974	0.32	0.745	-.0004864	.0006795
educ	-.0000941	.0000318	-2.95	0.003	-.0001565	-.0000317
sam_educ	-.0000644	.0000521	-1.24	0.217	-.0001665	.0000377
studied_abroad	.0000865	.0000654	1.32	0.186	-.0000417	.0002148
age	-7.47e-06	2.84e-06	-2.63	0.009	-.000013	-1.90e-06
ceo_prev	.0000966	.0000418	2.31	0.021	.0000147	.0001784
ceo_tenure	6.46e-06	5.65e-06	1.14	0.253	-4.61e-06	.0000175
tenure_here	9.35e-06	3.23e-06	2.90	0.004	3.03e-06	.0000157
same_sph	-.0001325	.0000521	-2.54	0.011	-.0002345	-.0000304
bd	-.0000739	.0000456	-1.62	0.105	-.0001632	.0000154
familyperson	.0001881	.0000749	2.51	0.012	.0000414	.0003348
_cons	.0006566	.0003621	1.81	0.070	-.0000531	.0013664
sigma_u	.00032508					
sigma_e	.00039647					
rho	.4020246	(fraction of variance due to u_i)				

Appendix 3 Results of regression analysis with Tobin`s Q as a dependent variable (2)

```
Random-effects GLS regression                   Number of obs     =        900
Group variable: ID                              Number of groups  =         90

R-sq:                                           Obs per group:
     within  = 0.0350                                         min =         10
     between = 0.2091                                         avg =       10.0
     overall = 0.1186                                         max =         10

                                                Wald chi2(13)     =      49.30
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =     0.0000
theta          = .6360123
```

TobbinsQ_w	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
leverage_w	-6.01e-06	3.24e-06	-1.86	0.063	-.0000124	3.31e-07
ln_prof_before_tax_w	4.94e-06	1.95e-06	2.53	0.011	1.11e-06	8.76e-06
MtB_w	-9.17e-06	3.91e-06	-2.34	0.019	-.0000168	-1.50e-06
gender_male	.0000825	.0001548	0.53	0.594	-.000221	.0003859
educ	-.0000961	.0000316	-3.04	0.002	-.0001581	-.0000341
sam_educ	-.0000635	.0000519	-1.22	0.221	-.0001653	.0000383
studied_abroad	.0000853	.0000639	1.34	0.182	-.0000399	.0002105
age	-7.51e-06	2.82e-06	-2.66	0.008	-.000013	-1.98e-06
ceo_tenure	8.24e-06	5.59e-06	1.47	0.141	-2.73e-06	.0000192
tenure_here	7.86e-06	3.14e-06	2.50	0.012	1.70e-06	.000014
same_sph	-.0001285	.000052	-2.47	0.013	-.0002303	-.0000267
bd	-.000071	.0000455	-1.56	0.119	-.0001603	.0000182
familyperson	.0001919	.0000747	2.57	0.010	.0000454	.0003384
_cons	.000768	.0002091	3.67	0.000	.0003581	.0011778
sigma_u	.00032104					
sigma_e	.00039674					
rho	.395694	(fraction of variance due to u_i)				

Appendix 4 Results of regression analysis with Tobin`s Q as a dependent variable (3)

```
Random-effects GLS regression                   Number of obs     =        900
Group variable: ID                              Number of groups  =         90

R-sq:                                           Obs per group:
     within  = 0.0382                                         min =         10
     between = 0.2636                                         avg =       10.0
     overall = 0.1426                                         max =         10

                                                Wald chi2(15)     =      55.89
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =     0.0000
theta          = .63542073
```

TobbinsQ_w	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
leverage_w	-5.92e-06	3.22e-06	-1.83	0.067	-.0000122	4.04e-07
ln_prof_before_tax_w	5.16e-06	1.95e-06	2.65	0.008	1.34e-06	8.98e-06
MtB_w	-9.50e-06	3.91e-06	-2.43	0.015	-.0000172	-1.85e-06
gender_male	.0000628	.0001556	0.40	0.686	-.0002422	.0003679
educ	-.0000916	.0000316	-2.90	0.004	-.0001536	-.0000296
sam_educ	-.0000625	.0000527	-1.19	0.236	-.0001657	.0000408
studied_abroad	.0000686	.0000635	1.08	0.280	-.0000558	.000193
age	-6.89e-06	2.89e-06	-2.38	0.017	-.0000126	-1.23e-06
ceo_tenure	4.71e-06	5.61e-06	0.84	0.402	-6.29e-06	.0000157
tenure_here	8.60e-06	3.26e-06	2.64	0.008	2.22e-06	.000015
ceo_ten_prev	-5.68e-06	6.74e-06	-0.84	0.399	-.0000189	7.53e-06
ceo_prev	.0001143	.0000516	2.22	0.027	.0000132	.0002155
same_sph	-.0001388	.0000521	-2.66	0.008	-.0002409	-.0000366
chairman	-.000173	.0001094	-1.58	0.114	-.0003874	.0000414
familyperson	.000177	.0000744	2.38	0.017	.0000311	.0003229
_cons	.0006854	.0002128	3.22	0.001	.0002683	.0011024
sigma_u	.00032043					
sigma_e	.00039673					
rho	.39479889	(fraction of variance due to u_i)				

Appendix 5 Results of regression analysis with Market-to-book as a dependent variable (4)

```
Fixed-effects (within) regression               Number of obs      =       900
Group variable: ID                              Number of groups   =        90

R-sq:                                           Obs per group:
     within  = 0.0526                                         min =        10
     between = 0.0029                                         avg =      10.0
     overall = 0.0143                                         max =        10

                                                F(12,798)          =      3.69
corr(u_i, Xb)  = -0.3883                        Prob > F           =    0.0000
```

MtB_w	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
leverage_w	.0920179	.028717	3.20	0.001	.0356482	.1483877
ln_prof_before_tax_w	.0364291	.0181336	2.01	0.045	.000834	.0720242
TobbinsQ_w	-976.7761	314.9352	-3.10	0.002	-1594.975	-358.5768
educ	-.3782115	.3144868	-1.20	0.229	-.9955305	.2391075
sam_educ	-.953647	.5168906	-1.84	0.065	-1.968273	.0609788
ceo_tenure	.063874	.0629594	1.01	0.311	-.0597115	.1874596
tenure_here	.0056547	.0324342	0.17	0.862	-.0580119	.0693212
age	-.0112879	.0273177	-0.41	0.680	-.064911	.0423352
familyperson	.373084	.8031196	0.46	0.642	-1.203392	1.949561
switch	.3220902	.1141591	2.82	0.005	.0980026	.5461778
same_sph	-.7380464	.5190853	-1.42	0.155	-1.75698	.2808875
bd	-.7165552	.4458844	-1.61	0.108	-1.5918	.1586896
_cons	1.827159	1.478226	1.24	0.217	-1.074511	4.728828
sigma_u	1.9100603					
sigma_e	3.5520704					
rho	.22429821	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(89, 798) = 1.87                     Prob > F = 0.0000
```

Appendix 6 Results of regression analysis with Market-to-book as a dependent variable (5)

```
Fixed-effects (within) regression               Number of obs      =       900
Group variable: ID                              Number of groups   =        90

R-sq:                                           Obs per group:
     within  = 0.0529                                         min =        10
     between = 0.0041                                         avg =      10.0
     overall = 0.0132                                         max =        10

                                                F(14,796)          =      3.18
corr(u_i, Xb)  = -0.4036                        Prob > F           =    0.0001
```

MtB_w	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
leverage_w	.0912062	.0288277	3.16	0.002	.0346188	.1477935
ln_prof_before_tax_w	.0363358	.018156	2.00	0.046	.0006964	.0719752
TobbinsQ_w	-978.431	315.5845	-3.10	0.002	-1597.907	-358.955
c_age	-.0077545	.0443875	-0.17	0.861	-.0948849	.0793758
educ	-.3742868	.3153055	-1.19	0.236	-.9932153	.2446416
sam_educ	-.9733058	.5190929	-1.88	0.061	-1.992259	.0456468
ceo_tenure	.0503417	.07477	0.67	0.501	-.0964281	.1971114
tenure_here	.0138831	.0369671	0.38	0.707	-.0586815	.0864477
age	-.0130254	.0278413	-0.47	0.640	-.0676764	.0416256
familyperson	.3831532	.8048517	0.48	0.634	-1.196729	1.963036
switch	.3259647	.1169632	2.79	0.005	.0963719	.5555575
from_comp	-.2367805	.5717675	-0.41	0.679	-1.359131	.8855697
same_sph	-.6946301	.5295615	-1.31	0.190	-1.734132	.3448718
bd	-.7142333	.4494181	-1.59	0.112	-1.596418	.1679514
_cons	2.118237	1.680574	1.26	0.208	-1.180643	5.417118
sigma_u	1.9300463					
sigma_e	3.556016					
rho	.22755065	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(89, 796) = 1.85                     Prob > F = 0.0000
```

Appendix 7 Results of regression analysis with Market-to-book as a dependent variable (6)

```
Fixed-effects (within) regression               Number of obs      =       900
Group variable: ID                              Number of groups   =        90

R-sq:                                           Obs per group:
     within  = 0.0546                                         min =        10
     between = 0.0052                                         avg =      10.0
     overall = 0.0127                                         max =        10

                                                F(14,796)          =      3.28
corr(u_i, Xb)  = -0.4204                        Prob > F           =    0.0000
```

MtB_w	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
leverage_w	.0909296	.0287375	3.16	0.002	.0345194	.1473398
ln_prof_before_tax_w	.0373399	.0181796	2.05	0.040	.0016543	.0730256
TobbinsQ_w	-972.1601	315.544	-3.08	0.002	-1591.557	-352.7634
ceo_count	-.337299	.2674234	-1.26	0.208	-.8622374	.1876394
ceo_prev	.5355089	.5408888	0.99	0.322	-.5262281	1.597246
educ	-.4298911	.3182863	-1.35	0.177	-1.054671	.1948885
sam_educ	-.9087763	.5183355	-1.75	0.080	-1.926242	.1086897
ceo_tenure	.0590892	.0632307	0.93	0.350	-.0650294	.1832077
tenure_here	.003945	.0325891	0.12	0.904	-.0600258	.0679157
age	-.0073849	.0274958	-0.27	0.788	-.0613579	.046588
familyperson	.5188346	.8119842	0.64	0.523	-1.075049	2.112718
switch	.3627869	.1272301	2.85	0.004	.1130408	.612533
same_sph	-.8206881	.5231061	-1.57	0.117	-1.847519	.2061424
bd	-.7340177	.4462482	-1.64	0.100	-1.60998	.1419446
_cons	1.816681	1.48185	1.23	0.221	-1.092116	4.725477
sigma_u	1.9550824					
sigma_e	3.5527965					
rho	.23243628	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(89, 796) = 1.81                     Prob > F = 0.0000
```

Appendix 8 Results of regression analysis with ROA as a dependent variable (7)

```
Random-effects GLS regression                   Number of obs     =      1,930
Group variable: ID                              Number of groups  =        193

R-sq:                                           Obs per group:
     within  = 0.0422                                         min =         10
     between = 0.3125                                         avg =       10.0
     overall = 0.1053                                         max =         10

                                                Wald chi2(19)     =     155.59
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =     0.0000
theta          = .31807608
```

ROA_w	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
ln_sales_w	.0031415	.000811	3.87	0.000	.001552	.0047311
ln_equity_w	.0077133	.0008432	9.15	0.000	.0060606	.0093659
leverage_w	-.0023322	.0007467	-3.12	0.002	-.0037957	-.0008687
c_age	-.0000541	.0002784	-0.19	0.846	-.0005998	.0004915
gender_male	.864453	.5978578	1.45	0.148	-.3073268	2.036233
bd	.0011971	.009333	0.13	0.898	-.0170952	.0194893
educ	-.0136377	.0079633	-1.71	0.087	-.0292454	.00197
sam_educ	.0153054	.0097668	1.57	0.117	-.0038372	.034448
studied_abroad	.0129781	.0158708	0.82	0.414	-.0181281	.0440843
ceo_ten_prev	-.0035343	.0013115	-2.69	0.007	-.0061048	-.0009639
ceo_tenure	.0007949	.0009555	0.83	0.405	-.0010778	.0026676
tenure_here	.0013417	.0007418	1.81	0.070	-.0001122	.0027955
rf_citizen	-.007404	.0447523	-0.17	0.869	-.0951169	.0803089
same_sph	-.0141416	.0102478	-1.38	0.168	-.0342269	.0059436
switch	.0020235	.0023262	0.87	0.384	-.0025357	.0065827
age	.0338062	.0252552	1.34	0.181	-.015693	.0833054
age_sq	-.0003641	.000265	-1.37	0.170	-.0008836	.0001554
m_age	-.0382421	.0254702	-1.50	0.133	-.0881628	.0116786
m_age2	.0004028	.0002669	1.51	0.131	-.0001204	.0009259
_cons	-.9225702	.5961665	-1.55	0.122	-2.091035	.2458947
sigma_u	.04849486					
sigma_e	.14297595					
rho	.10317473	(fraction of variance due to u_i)				

Appendix 9 Results of regression analysis with ROA as a dependent variable (8)

```
Random-effects GLS regression                   Number of obs     =      1,930
Group variable: ID                              Number of groups  =        193

R-sq:                                           Obs per group:
     within  = 0.0419                                         min =         10
     between = 0.3139                                         avg =       10.0
     overall = 0.1054                                         max =         10

                                                Wald chi2(17)     =     156.22
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =     0.0000
theta          = .31525345
```

ROA_w	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
ln_sales_w	.0031467	.0008063	3.90	0.000	.0015663	.004727
ln_equity_w	.0077122	.0008388	9.19	0.000	.0060683	.0093561
leverage_w	-.0023296	.0007449	-3.13	0.002	-.0037896	-.0008697
gender_male	.8610377	.5961271	1.44	0.149	-.3073499	2.029425
educ	-.0137563	.0079787	-1.72	0.085	-.0293944	.0018817
sam_educ	.0152171	.0097594	1.56	0.119	-.0039111	.0343452
studied_abroad	.013887	.0152147	0.91	0.361	-.0159333	.0437073
same_sph	-.0141226	.0101807	-1.39	0.165	-.0340764	.0058312
ceo_ten_prev	-.0035288	.0012968	-2.72	0.007	-.0060704	-.0009871
ceo_tenure	.0008268	.0009487	0.87	0.383	-.0010326	.0026861
tenure_here	.0013282	.0007251	1.83	0.067	-.000093	.0027493
family_m	.000807	.0160713	0.05	0.960	-.0306921	.0323062
switch	.0019666	.002301	0.85	0.393	-.0025434	.0064765
age	.0336969	.0251743	1.34	0.181	-.0156438	.0830377
age_sq	-.0003632	.0002642	-1.37	0.169	-.000881	.0001547
m_age	-.03814	.0254153	-1.50	0.133	-.087953	.0116731
m_age2	.0004018	.0002663	1.51	0.131	-.0001201	.0009237
_cons	-.927032	.5917287	-1.57	0.117	-2.086799	.2327349
sigma_u	.04816969					
sigma_e	.14312204					
rho	.10174948	(fraction of variance due to u_i)				

Appendix 10 Results of regression analysis with ROA as a dependent variable (9)

```
Random-effects GLS regression                   Number of obs     =      1,930
Group variable: ID                              Number of groups  =        193

R-sq:                                           Obs per group:
     within  = 0.0420                                         min =         10
     between = 0.3136                                         avg =       10.0
     overall = 0.1054                                         max =         10

                                                Wald chi2(17)     =     156.27
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =     0.0000
theta          = .3151177
```

ROA_w	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
ln_sales_w	.0031472	.0008053	3.91	0.000	.0015688	.0047257
ln_equity_w	.0077096	.0008387	9.19	0.000	.0060657	.0093535
leverage_w	-.0023309	.0007442	-3.13	0.002	-.0037896	-.0008722
gender_male	.8601568	.5956585	1.44	0.149	-.3073124	2.027626
educ	-.0136302	.0079421	-1.72	0.086	-.0291964	.0019359
sam_educ	.0152727	.0097403	1.57	0.117	-.003818	.0343634
studied_abroad	.0133273	.015755	0.85	0.398	-.0175519	.0442066
ceo_ten_prev	-.0035077	.0013053	-2.69	0.007	-.006066	-.0009493
ceo_tenure	.0008242	.0009443	0.87	0.383	-.0010266	.0026749
tenure_here	.0013303	.0007236	1.84	0.066	-.0000879	.0027486
rf_citizen	-.0064985	.0445489	-0.15	0.884	-.0938127	.0808156
same_sph	-.0142146	.0101984	-1.39	0.163	-.0342032	.005774
switch	.0019485	.0023033	0.85	0.398	-.0025659	.0064629
age	.0336608	.0251743	1.34	0.181	-.0156799	.0830014
age_sq	-.0003628	.0002642	-1.37	0.170	-.0008807	.000155
m_age	-.0380845	.0253802	-1.50	0.133	-.0878287	.0116597
m_age2	.0004013	.000266	1.51	0.131	-.0001201	.0009228
_cons	-.9196423	.5937825	-1.55	0.121	-2.083435	.24415
sigma_u	.04815287					
sigma_e	.14312549					
rho	.10168127	(fraction of variance due to u_i)				

Appendix 11 *Results of regression analysis with ROE as a dependent variable (10)*

```
Fixed-effects (within) regression               Number of obs      =       1,930
Group variable: ID                              Number of groups   =         193

R-sq:                                           Obs per group:
     within  = 0.0469                                         min =          10
     between = 0.0550                                         avg =        10.0
     overall = 0.0021                                         max =          10

                                                F(14,1723)         =        6.05
corr(u_i, Xb)  = -0.6448                        Prob > F           =      0.0000
```

ROE	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ln_sales_w	.0057928	.0088397	0.66	0.512	-.0115330	.0231186
ln_equity_w	-.0235478	.0049049	-4.80	0.000	-.0331679	-.0139276
leverage_w	-.0161672	.0034826	-4.64	0.000	-.0229977	-.0093367
gender_male	.1970925	.1313767	1.50	0.134	-.0604058	.4545908
sam_educ	.1107276	.0589351	1.88	0.060	-.0048642	.2263193
rf_citizen	-.3873161	.2133166	-1.82	0.070	-.8057028	.0310706
same_sph	-.0138928	.0594958	-0.23	0.815	-.1305843	.1027987
ceo_ten_prev	-.0010028	.006632	-0.15	0.880	-.0140103	.0120047
ceo_tenure	.007259	.0066209	1.10	0.273	-.0057268	.0202449
tenure_here	.00535	.0468467	0.11	0.039	-.0865325	.0972324
familyperson	-.0052532	.0920792	-0.06	0.955	-.185852	.1753457
chairman	-.1201336	.1181465	-1.02	0.309	-.3518593	.1115922
age_sq	-.0225189	.0165671	-1.36	0.174	-.0550127	.009975
age	.0002273	.0001568	1.45	0.147	-.0000803	.0005348
_cons	1.793774	.5386726	3.33	0.001	.737253	2.850295
sigma_u	.28857974					
sigma_e	.55244816					
rho	.21437103	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(192, 1723) = 1.38                     Prob > F = 0.0009
```

Appendix 12 Results of regression analysis with ROE as a dependent variable (11)

Fixed-effects (within) regression — Number of obs = 1,930
Group variable: ID — Number of groups = 193

R-sq:
within = 0.0470
between = 0.0473
overall = 0.0026

Obs per group:
min = 10
avg = 10.0
max = 10

F(15,1722) = 5.66
corr(u_i, Xb) = -0.6414 — Prob > F = 0.0000

ROE	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ln_sales_w	.0065577	.008838	0.74	0.458	-.0107648	.0238802
ln_equity_w	-.0234036	.0048999	-4.78	0.000	-.033014	-.0137932
leverage_w	-.0159872	.0034835	-4.59	0.000	-.0228196	-.0091547
gender_male	.1486992	.1599737	0.93	0.353	-.01648492	.4622476
sam_educ	.1089544	.0589702	1.85	0.065	-.0067064	.2246152
same_sph	-.0043013	.0601005	-0.07	0.943	-.1221789	.1135764
ceo_ten_prev	-.0030768	.006809	-0.45	0.651	-.0164316	.0102779
ceo_tenure	.0042972	.0077588	0.55	0.580	-.0109204	.0195148
tenure_here	.0074885	.0468593	0.16	0.157	-.0844187	.0993957
family_m	-.0430452	.0951592	-0.45	0.651	-.2296849	.1435945
switch	.0097901	.0124466	0.79	0.432	-.0146219	.0342022
rf_citizen	-.3710776	.2138653	-1.74	0.083	-.7905406	.0483855
from_comp	-.0481969	.0629067	-0.77	0.444	-.1715784	.0751846
age_sq	-.0243115	.0165092	-1.47	0.141	-.0566917	.0080688
age	.0002486	.0001571	1.58	0.114	-.0000595	.0005567
_cons	1.791705	.5583764	3.21	0.001	.6965379	2.886873
sigma_u	.28719643					
sigma_e	.55256575					
rho	.2126857	(fraction of variance due to u_i)				

F test that all u_i=0: F(192, 1722) = 1.35 — Prob > F = 0.0019

Appendix 13 List of companies

PJSC Lukoil	OJSC AMURFARMATSIYA	OJSC VNIIETO	PJSC GUS-AGRO
PJSC "ALROSA"	PJSC AOMZ	OJSC VNIP TYAZHPROMELEKTROPROEKT	PJSC ROSNEFT
"AlfaStrakhovanie" PLC	JSC ARGOYASHSKY RADIOZAVOD	PJSC VNIPIGAZDOBYCHA	PJSC NOVATEK
Allianz Life Insurance Company, Ltd.	OJSC AREMEX	OJSC VNIPP	PJSC SURGUTNEFTEGAZ
OJSC Alliance LLC	PJSC ARMADA	PJSC VOLGOGRADENERGOSBYT	PJSC POLUS
JSC "AEP"	PJSC ASZ	PJSC VOLOGDAAGROPROMINVEST VAPI	PJSC MMK
Baltic Leasing LLC	OJSC ASTZ	PJSC VOLOGODAVTODOR	PJSC SEVERSTAL
OJSC "VAW"	OJSC AURAT	JSC VOLOGDA AVIATION ENTERPRISE	PJSC INTER RAO EES
JSC "VSW"	PJSC ASHINKSY METZAVOD	OJSC VOSLA	PJSC RUSHYDRO
JSC VTB Capital	PJSC Aeroflot	JSC VOSTEK	PJSC MAGNIT
PJSC CENTRAL TELEGRAPH	JSC BALTIISKAYA MEBEL	PJS VSZ	PJSC MGTS
PJSC "GAZPROM"	PJSC BAMSTROYMEKHANIZATSIA	OJSC VSPMK-Z	PJSC NIZHNEKAMSKNEFTEKHIM
Gazprom Neft PJSC	OJSC BAMTRANSTEXMONTAJ	OJSC VUZREMSTROIMONTAJ	PJSC NMTP
PJSC "STLC"	PJSC BARANOVSKOYE	PJSC VULKAN	PJSC KAZANORGSINTEZ
JSC "DOM.RF"	PJSC BASHINFORMSVYAZ	OJSC Vurnarsky drevkombinat	PJSC ROSSETI
JSC "EVRAZ ZSMK"	PJSC BASHNEFT ANK	PJSC VHZ	PJSC AFK Sistema
JSC "EVRAZ NTMK"	OJSC BELOZERNEFT	OJSC VIBOR	PSC VSMPO-AVISMA Corporation
"Ingosstrakh Insurance Company"	OJSC BELON	PJSC VIMPELCOM	PJSC ZIL
PJSC "Quadra - Power Generation"	PJSC BELUGA GROUP	PJSC VISOCHAISHIY	PJSC ARSAGERA
OJSC "Krastsvetmet"	PJSC BKSM	OJSC VYAZNIKOVSKIY LPKH	PJSC Astrakhan energy sales company
PJSC "MegaFon"	OJSC BLMZ	PJSC GAGARINSKREMTEHPRED	PJSC UTAIR AIRLINES
PJSC MTS	OJSC BMK	PJSC GAZ-SERVICE	PJSC CHKPZ
PJSC NLMK	PJSC BOGUCHANSKAYA GES	PJSC GAZKON	PJSC CHTPZ
PJSC "MMC "NORILSK NICKEL"	OJSC BSMZ	PJSC GAZPROM AUTOMATION	PJSC CHZPSN PROFNASTIL
PJSC "UAC"	OJSC BSP	OJSC GAZPROM GAZORASPREDELENIE VORONEZH	PJSC DVMP
PJSC Rosneft-KURGANNEFTEPRODUCT	OJSC BYKOV GRAIN RECEIVING ENTERPRISE	PJSC GAZPROM GAS DISTRIBUTION NIZHNY NOVGOROD	PAO ELECTROZINC
Rosneft-Dagneft	OJSC VALERIA	PJSC GAZPROM GAS DISTRIBUTION ROSTOV-ON-DON	PJSC ENEL RUSSIA

Rosneft-Altaynefteprodukt	OJSC VARZ-400	JSC GAZPROM PROMGAZ	PJSC IDGC OF CENTRE
Rosneft - Murmansknefteproduct	PJSC VARYOGANNEFTEGAZ	PJSC HALS-DEVELOPMENT	PJSC IDGC OF THE NORTH-WEST
Rosneft" - Karachay-Cherkessknefteproduct	OJSC VVZ	OJSC GATP	PJSC IDGC OF SIBERIA
Rosneft - Yamalnefteproduct	OJSC VEAL	OJSC GENZIANA	OJSC IDGC OF THE URALS
PJSC "Rostelecom"	OJSC VEGA	PJSC HERMES-MOSCOW	OJSC IDGC OF VOLGA
PJSC "IC RUSS-INVEST"	JSC VEKTOR	PJSC GZAS IM. A. S. POPOVA	INGRAD PJSC
JSC "Slavneft-Megionneftegas"	OJSC VELIZHSKAYA MSO	JSC "Transmashholding"	PJSC IRKUT CORPORATION
Slavneft-Megionneftegazgeologia	OJSC VENTA	OJSC GIDROPRESS	PJSC IRKUTSKENERGO
Slavneft-YANOS PJSC	OJSC VENFA	JSC GK ZARECHNIY	PJSC KALUGA RETAIL
PJSC "TATNEFT"	JSC VZJBK	ISC GLAVNAYA DOROGA	PJSC KAMAZ
Transneft	OJSC VICTORIA	JSC GLOBUS	PJSC KAMCHATSKENERGO
PJSC Uralkali	JSC VIS	PJSC GORDORSTROY	PJSC KMZ
PJSC "PhosAgro"	OJSC VK SRZ	OJSC GORZELENHOZ	PJSC KZMS
"FGC UES", PJSC	OJSC VKHP	OJSC GORIZONT	PJSC KGK
PJSC "Unipro"	OJSC VLADMORRYBPORT	OJSC GORPISHHEKOMBINAT	PJSC KUIBYSHEVAZOT
SLAVNEFT	OJSC VLADSNAB	OJSC GOSTINITSA VOSTOK	PJSC LENENERGO
AUTOELECTRONICS JSC	OJSC VLADSTROYKOMPLEKS	JSC GPZ-2	PJSC M VIDEO
PJSC AK MOSLIFTMONTAZH	OJSC VLADTEX_V	PJSC GRANIT	PJSC MAGADANENERGO
PJSC AKRON	OJSC VLADTEX_O	PJSC GRUPPA KOMPANII PIK	PJSC MECHEL
OJSC ALGORITHM	PJSC VMTP	PJSC LCR GROUP	PJSC MEDIAHOLDING
OJSC AMZ	PJSC VNIIGIS NPP	PJSC CHERKIZOVO GROUP	PJSC MOESC
OJSC AMUR-ZEA	OJSC VNIIID	PJSC GSFS MP	PJSC MORDOVENERGOSBIT
OJSC AMURGAGROPROMINFORM	OJSC WIIMOTESTATE	OJSC GULKEVICHSKY APSK	PJSC MORION